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# Telephony

## THE JOURNAL OF THE TELEPHONE INDUSTRY

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# *100% Access to Toll–Intertoll and Loca*

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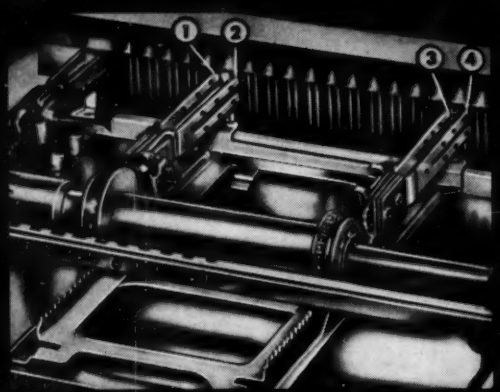


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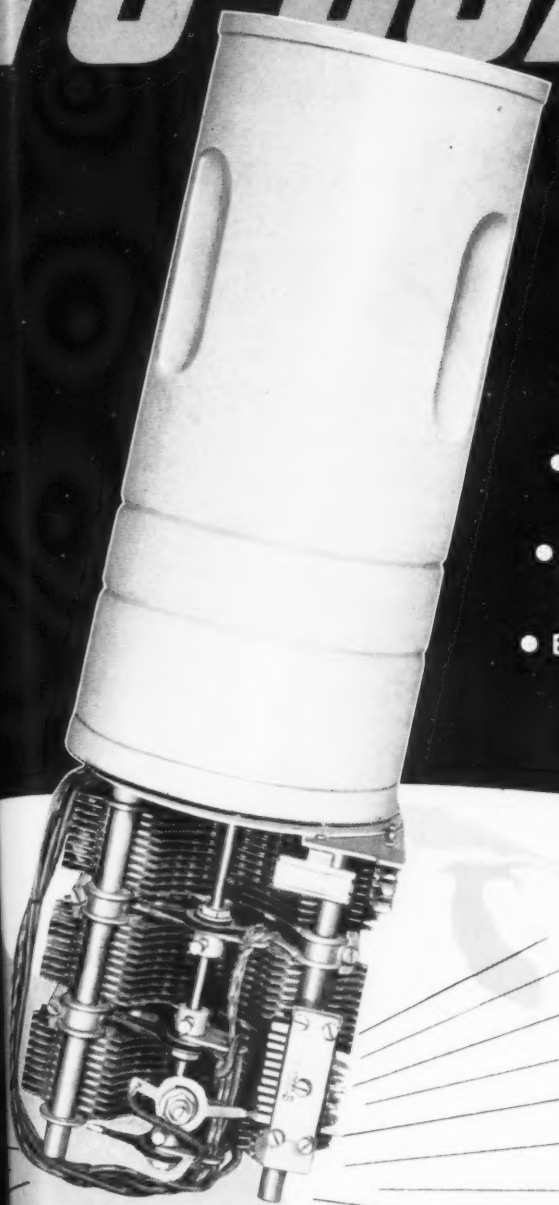

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# FLASHES AND PLUGS

**VITAL VOCABULARY.** Most of you probably have read that the word "telephone" comes from two Greek words, "tele" meaning "far" and "phone" meaning "sound." Other words common in this industry also have interesting origins. Following are a few of them:

Cable—from the Latin "capulum," meaning rope.

Wire—from the Old English "wir."

Insulator—from the Latin "insula," an island. (Here the name is based on the meaning of a thing "surrounded by" something else.)

Dial—from the Latin "dialis" meaning daily. It was applied to the face of a timepiece, and the resemblance to this object probably led to its use in telephony.

Copper—from the Old English "coper," which was from the Latin "cuprum" which in turn was taken from the Greek "kyprios," or the island now called Cyprus where the metal was popular in ancient times.

And, you may as well consider that most persons think the expression "phony" had its inception in America, but a professor of English, over in Dublin, says it's Irish. The word is derived from fawney (fairne—a ring). The ring, most times imitation, was employed in the crooked "ring-dropping" trick, and gullible people began to associate the trick with something crooked, or "fawney." See?

• • •

**SHORT ORDER.** A farmer retired and moved to the city. On the first morning in their new home his wife said, "Pa, it's time you got up and started the fire."

"Not me!" he exclaimed, nestling down deeper in bed. "We might as well start right now getting used to all the city conveniences. Call up the fire department!"

• • •

**GOOD HUSBANDRY.** The New York *Journal of Commerce* reports that a number of enterprising retailers are putting toll-free telephones into service, for the benefit of male shoppers who want to check back with headquarters to see if they have forgotten anything.

• • •

**SWEET TALK.** When a young man was hospitalized recently, his dejected parrot, Polly, refused to eat.

Finally the boy's family arranged for him to talk to his ladybird. He held the receiver and began saying "Daddy."

Polly squawked happily, and her appetite immediately returned to normal.

• • •

**BARE ESSENTIALS.** You may like the one about the telephone subscriber who informed a telephone company; "Well, a one-party line won't do, and we really don't need a four-line one. You see, there are just the two of us, my husband and me."

• • •

**NATIVE TONGUE.** Man at telephone: "How's that? Sorry I can't understand you. To whom did you wish to mumble?"


Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

**February 21, 1953**


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# ★ ★ ★ IN THE ★ ★ ★ NATION'S CAPITAL

by FRANCIS X. WELCH — WASHINGTON EDITOR

**President Eisenhower's move to decontrol wages and prices brings about many changes in old emergency control agencies. House bill to authorize Interior Department to erect utility facilities needs watching by telephone industry. *Collier's* article on Independent industry criticized.**

THE OLD emergency control agencies are coming apart at the seams pretty rapidly these days. Hardly had President Eisenhower given his State of the Union address when both the Office of Price Stabilization and Wage Stabilization Board began writing out the death warrants for batches and batches of control orders. The Wage Stabilization Board's (WSB) proposition was comparatively simple. Wages can be decontrolled—all wages—at one stroke of the pen. And that is exactly what President Eisenhower did by executive order last week. The reason why it was all done at once was because piecemeal decontrol in the wage field would obviously not be practical.

So, where does that leave telephone companies and every other business subject to wage controls? It leaves them absolutely free to fix not only wages, but also salaries (which have been covered by a separate division known as the Salary Stabilization Board) and the various "fringe" benefit problems. These include questions of vacation, holidays, pension plans, shift differentials, etc. All such controls have now gone down the drain.

The only thing left for the Wage Stabilization Committee (which took the place of the old WSB when it fell apart after the coal mine dispute last fall) is to prosecute some 4,000 enforcement actions. These grow out of past violations of wage and salary control orders by individual employers. The WSB legal division will be reorganized to clear them up as quickly as possible.

Other than that, all business employes, including telephone companies, are subject only to the federal minimum wage and hour provision of the Fair Labor Standards Act. Of course, they are subject to any valid bargaining contracts which they may have made with employe unions, with or without the assistance of the National Labor Relations Board.

### Piecemeal Price Decontrols

Placing price control on the skids was a more complicated matter. The process will probably be strung out until the end of this month. It could even last longer in view of the fact that the Office of Price Stabilization (OPS) does not come to the end of its statutory life until Apr. 30. But the unofficial word from the White House to OPS is to make it snappy. So, we can expect the various commodities to emerge from under price ceilings in fairly large bunches during the rest of this month.

Of course, telephone services never were subject to OPS price regulation as far as ceilings on telephone rates were concerned. But telephone companies were naturally affected by price ceilings on commodities which they had to buy for plant construction and maintenance. The general expectation is that there will be *no* notable price increases in any of the so-called "hard goods items." Some telephone pole line hardware had been selling at or near the ceilings. But most of the items which a telephone company needs, in the course of its normal operations, are not expected to show price increases in the near future.

OPS did decontrol one "fringe" service directly affecting telephone business. That was a special ruling removing the price ceiling on fees charged by hotels, per call, for switchboard service.

It would be a great mistake, of course, for telephone companies to overlook the fact that they are still subject to material controls—meaning National Production Authority (NPA) Order M-77. This is going to go on for some while. More about that later. But first, let us take a quiet look at what is left of the *administrative* machinery of the emergency controls.

The actual revision of the emergency controls organization, as it affects utilities, is something like this: Both the Defense Production Administration (DPA), and Economic Stabilization Agency (ESA), no longer exist as active agencies. DPA has been abolished entirely, by absorption into the top-level agency—Office of Defense Mobilization (ODM). This means that all the subordinate material control agencies (known as "claimant agencies"), which formerly reported to the DPA, now report directly to ODM. These include National Production Authority divisions, Defense Electric Power Administration (DEPA), Petroleum Administration for Defense (PAD), and Defense Transport Administration (DTA).

The price and wage control division of emergency controls — namely, the Economic Stabilization Agency — is technically being kept in existence, but in name only, until its expiration on Apr. 30. Actually, it has been telescoped into the Office of Defense Mobilization, so that the head of the Office of Defense Management, Arthur S. Flemming, is also the head of the Economic Stabilization Agency.

The subordinate price and wage control agencies, which formerly reported to the Economic Stabilization Agency (Office of Price Stabilization, the Wage Stabilization Board, and the Salary Stabilization Board) will be formally terminated some time between now and the end of April. In contrast with the material control agencies, which go on until June 30, and probably longer, these ESA subordinate agencies will all die before the statutory deadline (Apr. 30, 1953), according to present plans of the Eisenhower administration.

### The Future of Material Controls

How long will the NPA Communications Equipment Division continue with controls on telephone materials? This

writer's guess, based on available information, is that they will probably be wound up by the end of June. President Eisenhower did emphasize that certain forms of material controls will have to be continued even after the present Defense Production Administration expires on June 30. Ike even asked Congress to give him such extension authority for statutes when he included this requirement in his list of 11 "must" bills. The Eisenhower "must" bills are those which he feels Congress should consider at this session—not necessarily pass, or pass in the form requested.

But Ike probably did not have telephone service in mind when he spoke about extending material controls. What he did have in mind was the military defense production programs, atomic energy projects, military aircraft production, and certain essential civilian services including electric and natural gas utilities, and possibly the water utilities service, for an indefinite period.

And what is the future of the Controlled Materials Plan (CMP)? It will probably be cut down to some extent at the end of the present calendar quarter, Mar. 31. But whether it will include copper, aluminum, and steel, or whether the CMP setup will remain, still has to be decided. At a meeting, held last week by a top-level interagency group advising the ODM, there was some sentiment for ending all control material requirements at an early date. But from the Departments of Defense, Agriculture, and Interior more cautious recommendations were made, under which a modified CMP will probably run at least through June 30. Main reasons for this caution are the atomic energy, direct military, and electric power expansion programs.

The NPA Steel Products Advisory Committee scheduled a meeting for Feb. 17 to discuss the second-quarter steel outlook. If and when CMP does go off, it is expected that there will be a return to a system of selective priorities to insure delivery of necessary materials for defense needs.

The argument for retaining Petroleum Administration for Defense, and Defense Electric Power Administration, rests largely on the continuing shortage of certain types of steel. Controls are expected to continue on such hard-to-get items as tubular goods (pipe), high-quality plate, and heat exchangers. If PAD should be discontinued after June 30, such controls could be passed either to the armed services, in the case of aviation gasoline, or to the Interior Department's Oil and Gas Division for the other materials.

## REA Allocates $408,000 for Three States

**The Rural Electrification Administration approved three telephone loans during the week of Feb. 2 to 6, totaling $408,000, to finance the improvement and extension of rural telephone service.**

**Also on Feb. 5, at the request of the borrower, REA rescinded a loan allocation of $34,500 approved on Sept. 5, 1951, to the Denton (Kan.) Telephone Co.**

**On Feb. 4, Santa Fe Telephone Co., Melrose, Fla., was allocated an additional $164,000, third loan to this borrower.**

**This loan will be used to cover increased construction costs in connection with the $474,000 original loan approved in January, 1951. Construction under the first loan to the Santa Fe company is now in progress.**

**These two loans, together with the $270,000 loan approved in September, 1952, for construction of additional facilities, will enable the borrower to furnish modern telephone service to 1,880 subscribers in Alachua, Bradford, Clay, Putnam and Marion counties. The completed system will consist of 343 miles of line.**

**Also on Feb. 4, Home Telephone Company, Olive Branch, Miss., was allocated $176,000 by REA, second loan to this organization.**

**This supplemental loan will be used to finance the construction of 23 miles of line not provided for in the first loan of $244,000 approved in June, 1951, and to replace the common battery facilities in the Olive Branch central office with automatic. The original loan to this borrower had contemplated automatic service through the Byhalia central office only. Service without toll charge is planned between the two exchange areas of the system. In addition, the loan funds will cover increased construction costs since the first loan was approved.**

**As a result of both the REA loans, this borrower will be able to furnish automatic service to 953 rural subscribers in Marshall and DeSoto counties in Mississippi, and Shelby County, Tennessee. The system will consist of 178 miles of line.**

**Santa Rosa Telephone Cooperative, Vernon, Texas, on Feb. 5 was allocated $68,000, second loan to this borrower.**

**These loan funds will be used to cover increased construction costs since the original loan of $572,000 was approved in July, 1952.**

**Over 1,000 subscribers in Wilbarger, Foard, Hardeman, Clay and Wichita counties will receive modern telephone service as a result of the rehabilitation and new construction possible under both REA loans. The completed system will consist of 615 miles of line.**

As for the control agencies dealing with electric power, DEPA, NPA Electrical Equipment Division and Engine and Turbine Division are likely to stay on after June 30, with reduced personnel, for the purpose of maintaining construction schedules of power plants contributing directly to the defense effort. These concern mainly those plants which are to serve atomic projects.

The NPA Communications Division has already reduced its staff to less than a score of people as compared with more than 50 a year ago. Ralph F. Lucier, Warsaw, Ind., president and general manager of the United Telephone Co., Inc., which has telephone properties in Indiana and Ohio, has completed his tour of duty as head of the NPA Communications Division for the Interior. He has been succeeded by Clifford L. Newton, who has been loaned to the division by Southern Bell Telephone & Telegraph Co. Nobody has been named to the vacancy in the department because there just isn't enough activity to warrant filling the post.

### Interior Department Telephone Bill

There is no need to get too excited about a little noticed bill which Representative D'Ewart (R., Mont.) dropped into the hopper last week. But it is a measure which the telephone industry would do well to watch carefully—just in case. This bill (H. R. 1524) would authorize the Interior Secretary to erect and maintain "fire protection facilities, water lines, telephone lines, electric lines, and other utilities adjacent to areas administered by the National Park Service, where necessary, in the administration of such areas."

*(Please turn to page 33)*

# The OPERATOR'S CORNER

by MAYME WORKMAN, Traffic Editor

"THE Spirit of Service" is not confined to the switchboard in the Cookeville, Tenn., exchange of Southern Continental Telephone Co. According to C. W. Chastain, secretary-treasurer of the Southern Continental company, the operators in the Cookeville exchange have organized a club to extend "The Spirit of Service" beyond their line of duty in the central office. According to Mr. Chastain, this is how the club originated:

On July 7, 1952, an abstract idea in the minds of several telephone operators in Cookeville became a reality. On this date a group of telephone operators met and organized a club to be known as "The Cookeville Telephone Operators' Club." The Golden Rule was adopted as the club motto and one of the members wrote the club song entitled "The Operators' Theme."

The aim of the club is to perform acts of kindness and help the unfortunate in various ways. The monthly meetings are opened by the singing of the club song, repetition, in unison, of the club motto and a devotion by one of the members. Then follows the business session, at which various plans for carrying out the aim of the club are discussed.

In the short time the club has been in operation, some of the services rendered by it have been: Taking groceries to needy families; buying school books for an unfortunate child; donating clothes to needy people; donating blood to the Red Cross; taking candy, nuts and fruits to the old people at the County Farm; taking magazines and candy to shut-ins; distributing toys to poor children at Christmas; sending fruits to the sick, and always being ready to perform any other service by which help can be rendered to any person.

The officers of the club, which now has 32 members, are as follows: President, Miss Estill Lee; vice president, Mrs. Whitson Burton; secretary, Mrs. Kathleen Jackson; treasurer, Miss Opal Allison; song leader, Mrs. Billy Jenkins; social committee, Miss Irene Burnette, Mrs. Doyle Rogers and Miss Vera Bledsoe.

This is the story of "The Cookeville Telephone Operators' Club." What a wonderful idea! Doesn't it make you feel like you would love to have a club in your office? Anyone can donate money for a good cause, but when you give your personal time and effort for a worthy cause, you are making the most precious contribution and one that is greatly appreciated.

The strange thing about rendering kindness to others is the donor receives more pleasure and satisfaction from the kindly act than the recipient. I am confident the operators in the Cookeville exchange are having a marvelous time following their motto, the Golden Rule. They have accomplished so much in such a short time.

Doesn't it make you proud to be an operator when you learn about the things that are being done by operators in other exchanges. But why be satisfied with being proud of the actions of other operators? Why not emulate their example and organize a club in your exchange for the purpose of being kind to others who are less fortunate?

What a wonderful thing it would be if the action of the operators in the Cookeville exchange would result in clubs being formed in telephone exchanges throughout the nation!

If you form a club in your exchange, write to the editor of this column and tell about it. Send all of the information possible so that we may publish it.

Congratulations to the operators in the Cookeville exchange! May you continue to find many opportunities to be helpful to others. Our country needs more people just like you. Rotary's motto is "Service above self." It is a beautiful motto and its meaning is comparable to ours, "Service with a smile." Extending the spirit of service beyond the line of duty, into your personal life, will make your life richer, fuller and happier, at work and at play, during your leisure hours.

It will be interesting to learn which exchange in the United States will form the second operators' club for the same worthy purpose chosen by the operators in the Cookeville, Tenn., exchange.

## AT&T Leads in Total Stockholders

**There are 21 corporations in the United States owned by more than 100,000 stockholders each. The American Telephone & Telegraph Co. is numerically far out in front with more than 1,100,000.**

**Next comes General Motors with 482,000 and the United States Steel Corp. third with 270,000, followed by the Standard Oil Co. of New Jersey and then the Cities Service organization.**

## Traffic Questions

(1) When a terminating toll center operator answers a recording trunk signal and a called party reports that he has been cut off on an inward call, what should the operator say?

(2) On a paid overseas call from a coin telephone (paystation) at the end of conversation, if the initial period has been exceeded, what information should the operator give the customer?

(3) Who is responsible for timing a conference call?

(4) On an outward conference call, how long should the operator monitor on the calling line?

(5) On an outward conference call, how should the operator proceed when a disconnect is received from the calling telephone? (Entire call relayed at another office.)

*Answers are presented on page 32.*

V V

**"Good business means good jobs, good pay, and an abundance of products we can buy at reasonable prices. Federal economy will mean a balanced budget, a sound dollar, and a stable economy for the whole nation"—Mooselake (Minn.) *Star-Gazette*.**

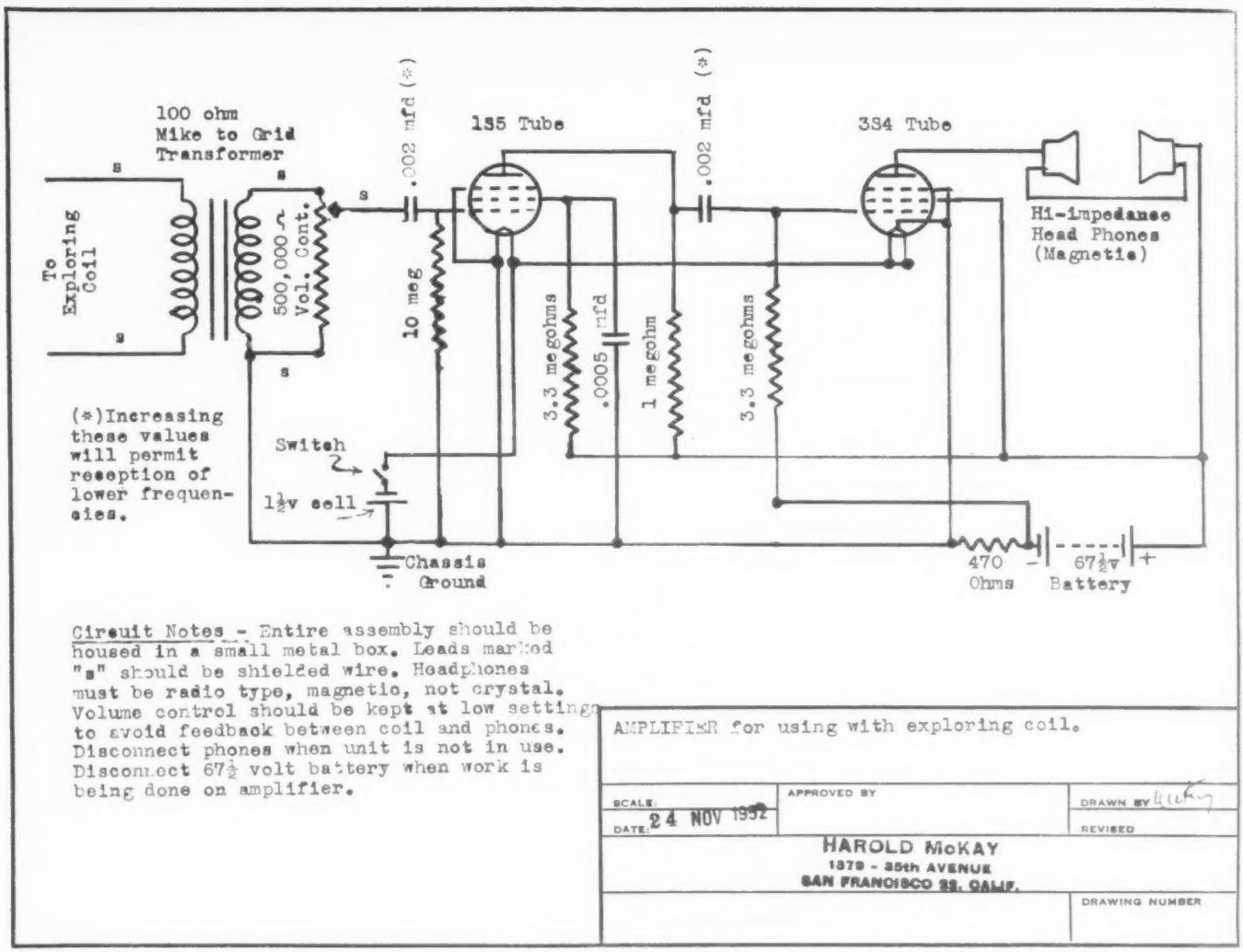



FIG. 2

# THE EXPLORING COIL-

## how to construct and use

*By HAROLD McKAY, Electronic Consultant*

A PROPERLY constructed exploring coil, when used with a small portable amplifier and a tone source, can be used to accurately locate buried cables, pipes or other conductors. It can also be used to locate the spot where the insulation has failed on a grounded conductor.

All of the equipment required for this work can be readily constructed by the telephone man.

### The Coil

The coil, or "hoop" as it is usually called is made by winding wire on a wooden bicycle wheel rim. About 250 to 300 turns of No. 24 or No. 25 double cotton covered wire will do the job. A simple way to wind the wire is to place the hoop on an expandible wire reel. Winding should be as tight as possible in order to get a maximum amount of wire on the rim.

After winding, the coil should be weatherproofed by wrapping it with rubber or plastic tape. The ends of the wire can be brought out to binding posts or clips, which can be held in place with the tape.

### The Tone

A tone source can be constructed from a good buzzer with a condenser connected as shown in the accompanying photograph. The pitch of the buzzer should be somewhat high, so the sound will not be too much like that of 60-cycle power. Otherwise one might mistakenly follow a buried power wire instead of a telephone cable *(See Fig. 1)*.

Manufactured splicer's tone sets are available from the suppliers which will operate with this coil. Some of these sets put out interrupted tone which is easy to identify when power line interference is present.

### The Amplifier

While the coil will give results without the use of amplification by merely connecting a telephone receiver to the coil, much better results are obtained with a small portable amplifier.

The amplifier shown in the accompa-

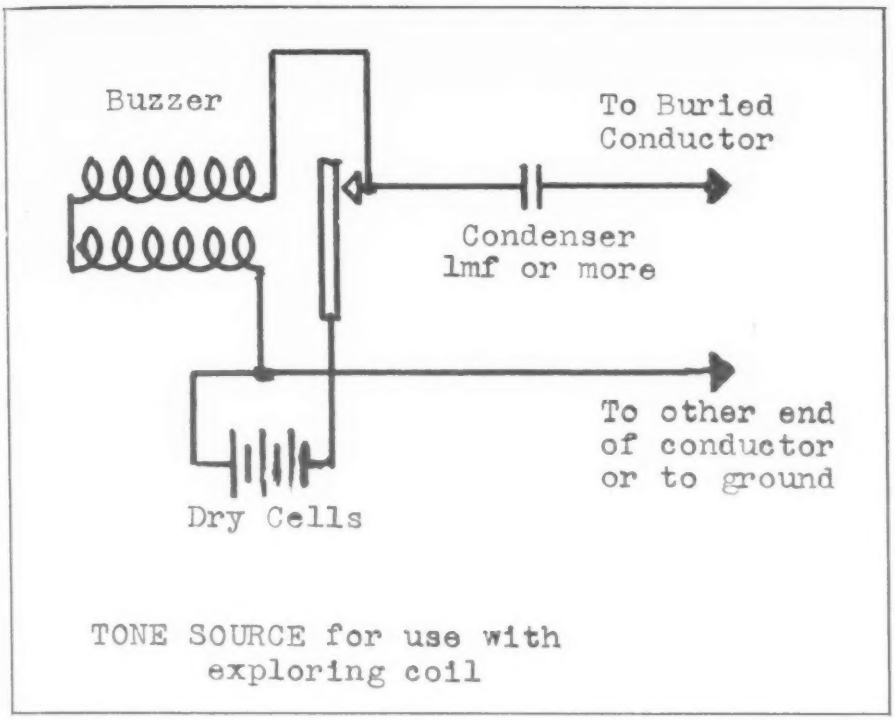

Buzzer
To Buried Conductor
Condenser 1mf or more
To other end of conductor or to ground
Dry Cells
TONE SOURCE for use with exploring coil

FIG. 1

nying photograph uses two miniature tubes of the type found in portable radios. It uses one flashlight cell to light the tubes, and a miniature "Minimax" 67½-volt "B" battery. It will give many hours of service if the user will replace the flashlight cell as it runs down. The "B" battery will last much longer.

The amplifier circuit is essentially the same as that used in many small "personal-portable" receivers. In fact, if such a receiver is available, it may be used as an amplifier, by connecting the leads from the transformer to the volume control of the radio set, just as it is shown connected to the volume control in *Fig. 2*.

However, if this is done, a standard telephone receiver should be connected in place of the voice coil of the radio speaker, instead of the high-impedance telephones required for the specially built amplifier.

The condensers marked (*) in *Fig. 2* have an effect upon the frequency response of the amplifier. The values shown discriminate against the fundamental of the 60-cycle power line frequency. Lower frequencies can be heard if the value of these condensers is increased.

**Use of the Exploring Coil**

In order to use the exploring coil, it is necessary that the following conditions exist:

The tone from the buzzer must be connected to the buried object, and a return path established back to the buzzer, either by a wire attached to the other end of the object, or through the earth.

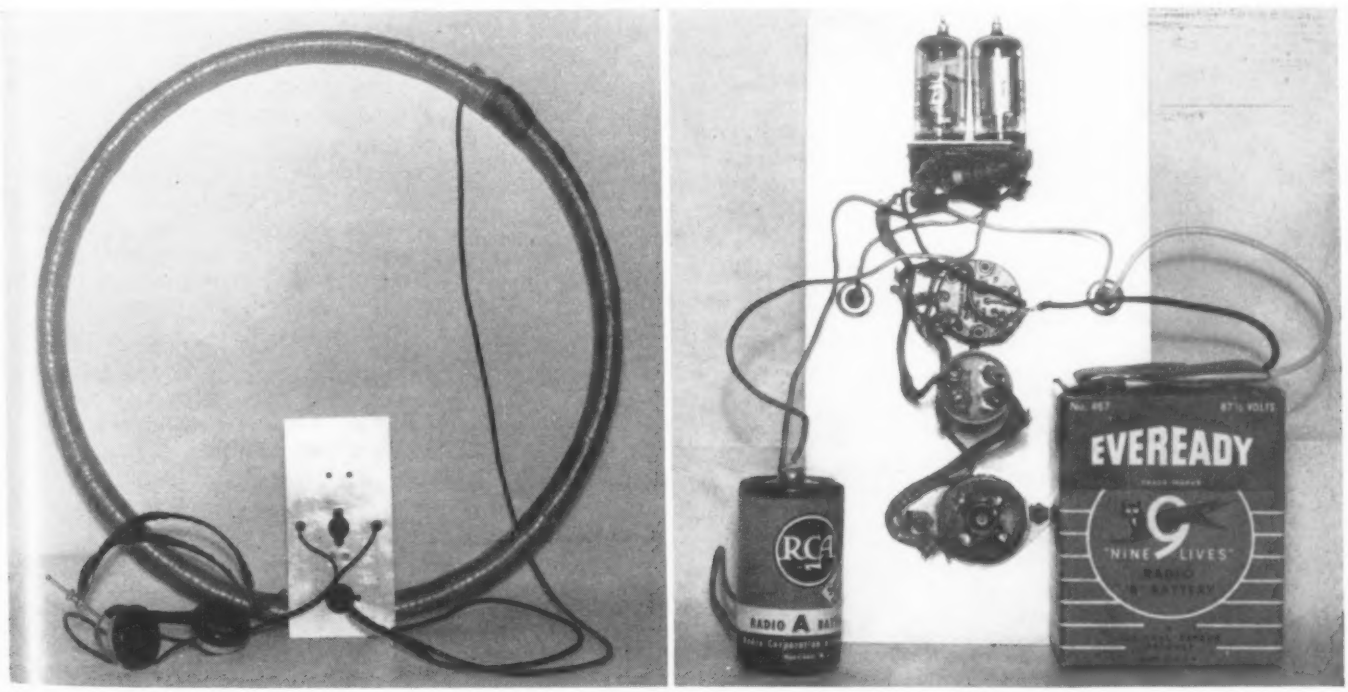
In a case where both ends of a pipe are accessible, such as a dip under a road, one side of the buzzer would be connected to one end of the pipe, and a return wire brought from the other end of the pipe. The return wire should be laid over as large an arc as possible, to keep it away from the route of the buried pipe.

With a buried wire or cable, which has a fault to ground, one side of the buzzer would be connected to the defective pair, and the other side to the cable sheath or to a ground rod driven close by.

In theory, the buried conductor acts like a radio antenna, and "broadcasts" the sound of the buzzer in all directions. When the exploring coil is brought in range of this signal, the many turns of wire pick up the tone.

When carrying the coil, it is held out flat, like carrying a tray. The electro-

*(Please turn to page 32)*




**LEFT PHOTO: Exploring coil, amplifier and headphones, used to locate underground conductors. RIGHT PHOTO: Interior view of exploring coil amplifier. Parts on panel are (top to bottom): Tubes and amplifier deck, volume control with switch, input transformer, and socket for coil plug-in. Photos by Richard Hartwig.**

Trouble Clearing

# More About Testing Equipment

By L. N. MARTIN, Virginia, Ill.

OUR PREVIOUS articles on testing equipment (TELEPHONY, July 5, 1952, p. 15; Aug. 16, 1952, p. 20; Aug. 23, 1952, p. 19 and Sept. 13, 1952, p. 24) seem to have interested many of our readers and also proved to be somewhat controversial. Controversy is good when it leads to the truth.

There appears to be a disagreement between those who favor the voltmeter as a trouble testing instrument and those who think that the ohmmeter is the best instrument for this purpose. Forunately this argument is easily disposed of. Both scales can be—and often are—placed on the same meter. The testman can then take his choice and if the other scale offends him he can paste a piece of paper over it.

As some of our readers may not be familiar with the difference between a scale of ohms and a scale of volts, we show in *Fig. 1* the scales of a meter which one of the large Independent manufacturers places on its test desks and test panels. This meter has only two scales which makes it easier to read than a meter with three or four scales. Each scale, however, has multiple uses.

The lower scale runs from "0" on the left to "150" on the right and is a scale of equal parts, i.e. the distance between 10 and 20 is the same as that between 20 and 30, or between 30 and 40, etc., throughout the scale. This scale is basically a scale of volts but is also used for milliamperes and for microfarads. When used as a voltmeter, each of the smallest divisions indicates 2 volts. The testman can estimate one-fifth of a division with reasonable accuracy which, in this case, would be two-fifths or .4 volts. However, the accuracy of this meter is 1 per cent of full scale, which would be 1.5 volts. Therefore, there is no point to trying to read this scale closer than 1 volt which is one half of a small division. At this point we will digress for a moment to discuss "accuracy of meters."

Scientifically speaking no measuring instrument is absolutely accurate. Therefore, a meter is rated according to the degree of accuracy or the amount of error that may be expected. Instruments of super accuracy are used in laboratory work and are very expensive; also very delicate. Some must be enclosed in air-conditioned glass cabinets. Such instruments would be totally unfit for use in a telephone office. In general, a meter should be chosen which has only the accuracy required for the particular job that the meter is required to do. The meter will then cost less and be more rugged than a meter of unneeded accuracy.

For test desk use this meter with 1 per cent accuracy is satisfactory; however, we would prefer one-half of 1 per cent accuracy. On the other hand, a voltmeter to be used for measuring the potential of one cell of storage battery should read correctly to the nearest .01 volt. As the scale of this meter is usually 0-3, the accuracy should be one-third of 1 per cent.

**PART 25. The preceding article in this series appeared in the Jan. 3 issue, p. 18.**

Now, let us resume our discussion of the meter shown in *Fig. 1*. Its resistance is 50,000 ohms. The upper scale is a scale of ohms and runs from "0" at the right to "infinity" at the left. The symbol which looks like an "8" lying down indicates infinity which is a theoretical number meaning "the greatest number." However, for practical purposes as used here, it means "wide open" or a resistance so high that it cannot be detected with this meter. The letter "K" on this scale stands for "Kilo-ohms" or 1,000 ohms. The letter "M" means "Meg-ohms" or 1,000,000 ohms. (We will use the symbols "K" and "M" in the text of this article.)

This is a scale of unequal parts and the smallest divisions have various values depending on the part of the scale in which they are located. One-half to one-fifth of a division may be estimated, depending on the size of that particular division. The following table shows the value of one division and one-half division in various parts of the scale:

| *Range* | | *One Division (Ohms)* | *One-half Division (Ohms)* |
|---|---|---|---|
| *From* | *To* | | |
| 0 | 30 K | 1 K | 500 |
| 30 K | 150 K | 5 K | 2,500 |
| 150 K | 250 K | 10 K | 5 K |
| 250 K | 500 K | 50 K | 25 K |
| 500 K | 1 M | 100 K | 50 K |
| 1 M | 5 M | 1 M | 500 K |

We believe that all will agree that this scale must be read with much greater care than the lower scale and that the first step is to tabulate the values of the smallest divisions as we have done.

This ohms scale is based on a 150-volt battery and a resistance of 50 "K" ohms. If either the voltage or resistance is changed the ohm scale is changed. The voltage is kept constant by the zero adjustment which will be described later. The meter is provided with a shunt which changes its resistance to 500 ohms or one-hundredth of its former value. The ohm scale may now be used by dividing the reading by 100. Thus the 50 "K" in the center of the scale becomes 500 ohms. This scale up to about 5 "K" ohms is useful for trouble location and measurement. The following table shows the method of reading the meter with the 500-ohm shunt:

| *Range* | | | | |
|---|---|---|---|---|
| *As shown on scale* | | *Actual* | | *Smallest Division (Actual)* |
| *From* | *To* | *From* | *To* | |
| 0 | 30 K | 0 | 300 | 10 ohms |
| 30 K | 150 K | 300 | 1,500 | 50 ohms |
| 150 K | 250 K | 1,500 | 2,500 | 100 ohms |
| 250 K | 500 K | 2,500 | 5,000 | 500 ohms |

In the lower part of the scale one-

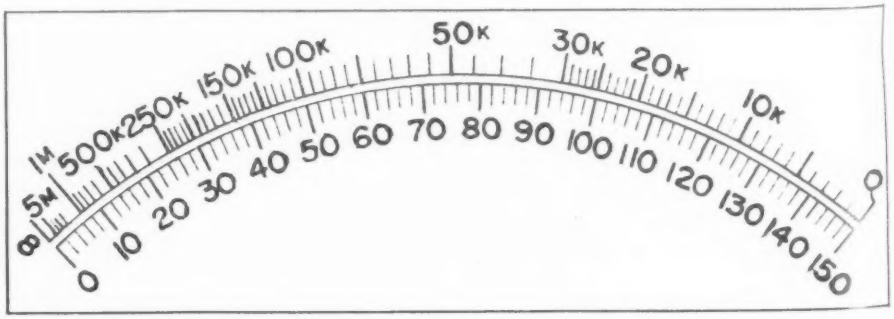



Fig. 1

fifth of a division may be estimated, which is 2 ohms. Readings to 1 ohm cannot be made with accuracy. Also, except in certain parts of the scale, finer reading cannot be obtained by reading the lower scale and converting to ohms.

We have discussed the scales of this meter at length because it was convenient to use as an illustration of both scales side by side. However, there are many other arrangements, some of which we like even better. When purchasing a meter the buyer should study and analyze the scales as we have done to be sure that they meet his particular requirements. He should also ascertain the accuracy rating of the meter.

Making electrical meters is a specialized business and only a few firms in the United States are engaged in it. Switchboard manufacturing companies ordinarily buy their meters from one of these well known firms. However, the switchboard company usually specifies the scales and the accuracy of the meters which they buy.

Our attention has been called to a test desk (which uses the above described meter) which has some unusual features. This desk seems to be designed on the principle that a separate key should be provided for each test. Thus, there is one key to operate the test for "short"; another for "ground on ring"; another for "foreign battery on ring," etc. Separate keys are provided for "bridged capacity," "ring to ground capacity," etc. Capacity tests are not made by "flipping" a key as on most desks but a 60 IPM interrupter makes the necessary reverses so that a uniform deflection of the meter is obtained for any given capacity. Each MF produces a 15-point deflection on the lower scale of the meter. Thus, if the key for bridged capacity is operated and the meter reading is "60," there is 4 MF across the line. The meter will even read the ringing current by means of a transformer and rectifier.

The testing voltage for the meter is obtained from the 110-volt, 60-cycle utility power through a transformer, rectifier, and filter. The testing voltage is regulated on the primary side of the rectifier. The advantages claimed are: Lower cost than dry cells; constant voltage, rather than the gradually lowering voltage of dry cells; and zero adjustment for the ohmmeter by actual voltage adjustment, rather than by means of a potentiometer.

The use of rectified ac current for testing appears to be a good improvement for use at exchanges where the utility power is reliable or where there is a stand-by generator. However, at some locations the testing program would be subject to frequent interruptions.

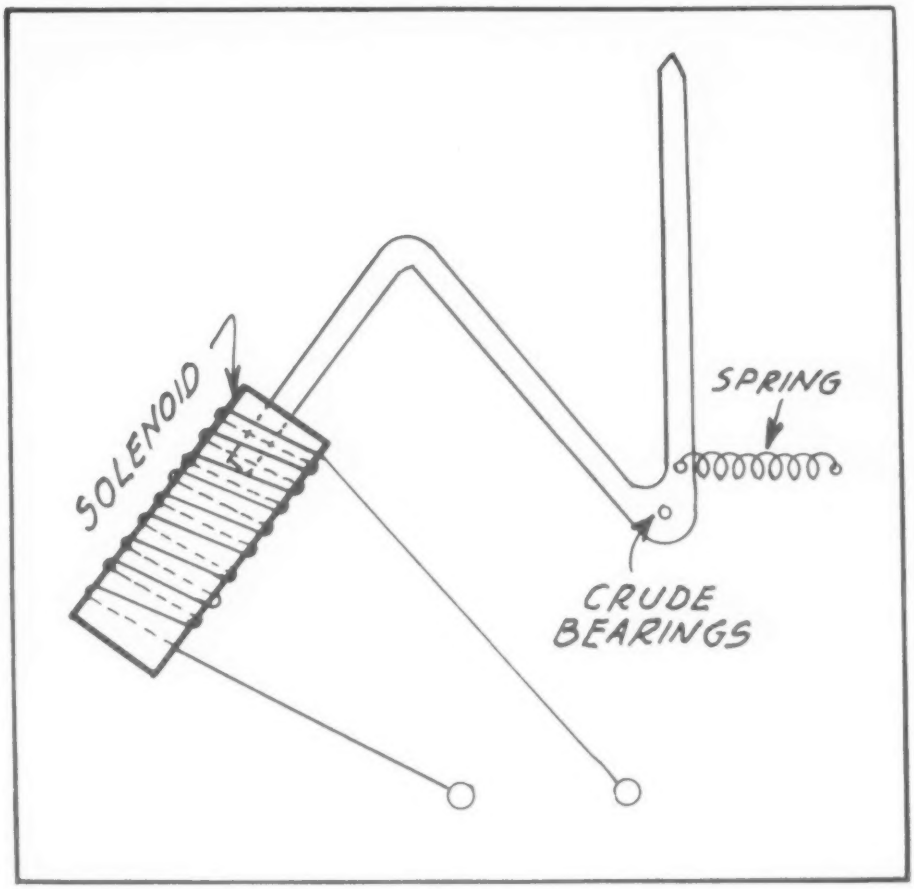



Fig. 2

The idea that a test desk should be as easy to operate as a chewing gum vending machine—just press the button and the machine does the rest—will appeal to some people. The testman is not required to know anything about the circuits of his desk. However, he must know a great deal about the principles of electricity and telephone circuits, so it cannot be made an "assembly line" job. Others (including the writer) will prefer testing circuits such as we discussed in the Sept. 13, 1952 issue.

This test desk has many other interesting and progressive features; however, it is intended for a large office and is probably expensive. Our interest is more in a small desk or cabinet suitable for a small company. As we stated in a previous article (TELEPHONY, Aug. 16, 1952, p. 20) every exchange, no matter how small, should have testing equipment suitable for its size and type. It should be purchased with care so as to secure the features wanted and needed at that office. Testing equipment purchased through one of the large and well-known suppliers should be reliable. However, there are some testing outfits offered for sale whose chief merit (if it be a merit) is cheapness. For example, there is a cheap way of making a meter which we illustrate in *Fig. 2*. This type might be a good toy for "Junior" if he is electrically inclined, but that is all. The genuine D'Arsonval movement is built like a watch. (There are also other good types of movements.) Many meters have a glass window in the case through which the movement can be seen.

We have had a number of inquiries concerning rapid wet and dry weather testing equipment. There are several such outfits made for large offices which are somewhat expensive (around $700). There seems to be a demand for an inexpensive set suitable for a small office and we hope that some supplier will soon meet this demand. In the meantime many sets are made up locally.

We mentioned the sluggishness of the voltmeter relay or contact-making voltmeter. There is now available, through several suppliers, what might be called a milliammeter relay. It is a relay with micrometer adjustments which may be set to operate on the nearest .000001 ampere and it is fast operating. Two or three of these relays may be used in series (with additional resistance if required), each relay set to operate at a different value so as to give lamp indications for two or three outside resistance objectives.

*(Please turn to page 32)*

# THE PLANT MAN'S Notebook

by Ray Blain, Technical Editor

SOME FEW SPECIAL installations in the past have utilized small pole-mounted satellite dial exchanges. These small systems have been protected by some type of housing, usually metal or wood similar to a large cable terminal or a cross-connecting box.

Moreover, a similar metal enclosure is being rather extensively employed at the present time to house certain types of carrier equipment that must necessarily be installed out on the line.

To date, the housing for this type of equipment, to the best of our knowledge, is not bullet-proof. We are advised that the cost of a bullet-proof housing would prove prohibitive. Engineers often express the fear that if equipment is pole-mounted in a housing that is not bullet-proof, it will certainly soon be ruined by hunters and careless marksmen.

In this connection, we have never heard of a single case in which pole-mounted equipment has ever been damaged by a stray bullet.

If any of our readers has definite information of damage from this source, we should be very pleased to hear about it.

• • •

Mobile radio-telephones played a most important part in keeping the parade for the inauguration of President Eisenhower moving on schedule. Mobile television was likewise used most successfully in the coverage of this historic event.

• • •

There are many types of telephone work which prove hard on the hands, yet for which gloves cannot be conveniently worn. One such job is lacing switchboard cable along runways on installation jobs. We have experienced many blistered thumbs and fingers that have resulted from pulling these stitches tight.

Open-end leather finger guards are now available that will protect fingers or thumbs, front or back, from cuts, abrasions or blisters. Various designs are available and are made in several leathers, and other materials, with an elastic web back for a snug, cool, comfortable fit.

• • •

A lightweight power-driven earth auger has recently been placed on the market. It is believed that this new tool may be found useful in drilling holes for small poles on certain types of rural lines in some sections of the country. (See cut below.)

It is engineered to operate with any ½-inch, or larger, electric drill rated at 5 amperes or more and designed to rotate at 600 RPM, or less. This drill is designed to dig holes from 4 inches to 11 inches in diameter and from 3 to 6 feet in depth.

It is claimed that this drill can be operated in any remote location from 1.5 to 2 KW portable ac or dc generators when commercial power is not available.

• • •

The Bell System will initiate direct dialing of many station-to-station telephone toll calls by 50,000 individual and two-party line customers in 12 Long Island and Westchester, N. Y., central offices during the coming year. They will be the first in the New York Telephone Co.'s territory and among the first in the Bell System to enjoy this service.

With the use of the No. 5 crossbar central offices, including automatic message accounting equipment, these customers will be able to make calls direct to more than 4½ million telephones in downstate New York and sections of northern New Jersey.

It is stated that by the end of 1955, about 300,000 customers in 25 communities in Nassau, Suffolk and Westchester counties, New York, will have similar service.

• • •

According to the Bell Laboratories' "Record," the dial, as used to produce the interruptions of current that direct or control the switching process at the central office, is actually much older than the telephone. The dial was first suggested by Cooke in 1836 in connection with telegraph and was first used in Professor Wheatstone's dial telegraph in 1839.

During successive years, it was the subject of many improvements, and was not only used in dial telegraph systems, but also in fire alarm and district messenger systems. The modern type of finger-wheel dial, a great improvement over the old pointer type dial, did not appear, however, until 1896.

• • •

It has been said that there are some friends you can depend upon—always around when they need you.

# MAINTENANCE TESTING EQUIPMENT

By JOHN A. BRACKEN

THE DIVERSITY of relay equipment required in the operation of a telephone system, includes relays which are termed marginal. The marginal type relay is designed to function on the difference between the value of the current that the relay will and will not operate on, which is technically referred to as the margin of operation. The relay's armature will be attracted when the current flowing in the relay winding reaches a definite operate value, and will release and remain unoperated when the current is decreased to the required "release" value.

*Fig. 1*, illustrates an example of the operation of a marginal relay. The marginal relay D is connected in series with relay C and the milliammeter. The letters MG on the core of relay D indicate that this is a marginal type relay.

The vaiue of the current flowing in the circuit is:

$I = E \div R_1 + R_2$, or

$24 \div (600 + 400) = 0.024$ ampere,

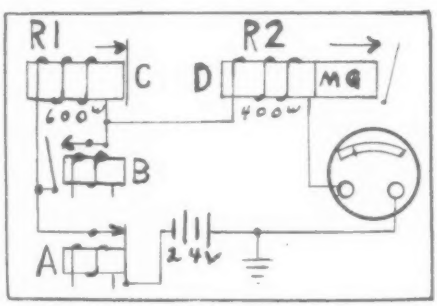



FIG. 1

or 24 milliamperes, and is sufficient to operate relay C, but not the marginal relay D.

To operate relay D it will be necessary to increase the current by 150 per cent. What current is required? The new current value will be:

$24 \times 1.5 = 36 + 24 = 0.060$ ampere,

or 60 milliamperes. By shunting out

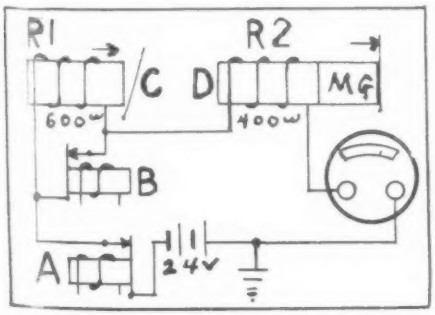



FIG. 2

**PART 57. The preceding article in this series appeared in the Oct. 4, 1952, issue, p. 23.**

the C relay with relay B as shown in *Fig. 2*, the current flowing in the circuit will be increased to the required "operate" value of 60 milliamperes, and relay D will operate. It will be noted that all the B relay does is to provide a shunt, or short circuit between the terminals of the C relay.

The resistance of the shunt is so small, compared with the relay winding, that practically all the current flows through the shunt path, thereby cutting off the C relay from the operative current without breaking the circuit.

In *Fig. 3*, relays D and E are marginal. Relays B and D are operated, but relays A, C and E are not. When relay A is operated as shown in *Fig. 4*, relay C is operated, while at the same time its winding is connected in parallel with that of relay D.

This arrangement divides the current between the two windings, and due to the smaller resistance of relay C, the current in relay D is reduced enough to release it, while the value of the current flowing in relay E is correspondingly increased sufficiently to operate it.

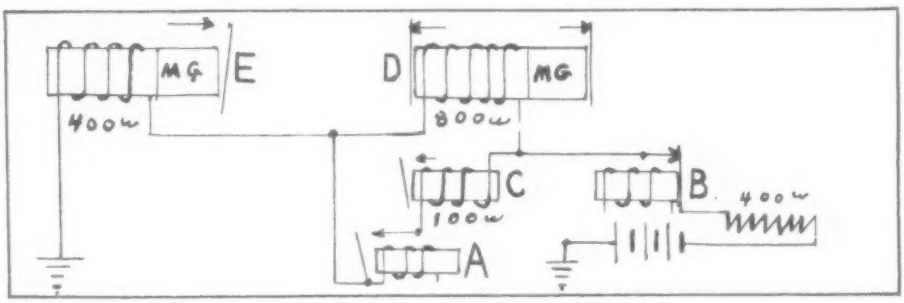



Fig. 3

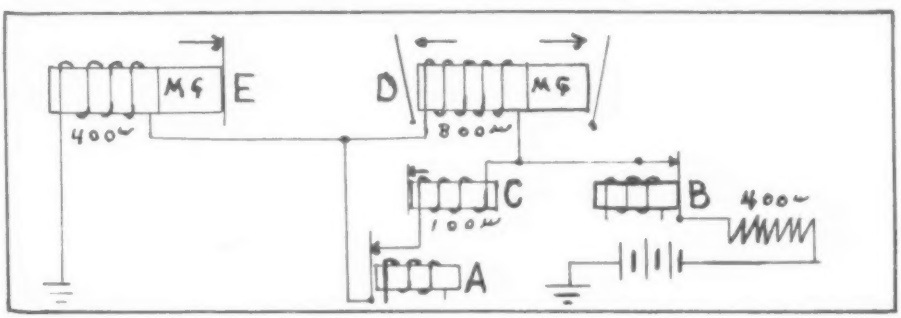



Fig. 4

The "trip" relay, used in automatic machine ringing circuits for the purpose of "tripping," or disconnecting ringing current that has been applied to a telephone line, is a marginal type relay designed to operate on ac and dc under very close marginal conditions.

During the ringing period, the total opposition of the line, telephone set ringer and capacitor, is so high that the ringing current passing through the trip relay is sufficient to operate it. However, when the handset is removed from its cradle at the station, the ringer and capacitor are shunted out, thus greatly reducing the impedance of the entire circuit. As a result of this action the value of the ringing current flowing in the winding of the trip relay is increased, causing the relay to operate and immediately cut off the ringing current.

If the called party removes the handset during the "silent period" (telephone set bell not ringing), battery flows through the trip relay winding, thereby operating the relay.

Since the current used to operate station ringers is alternating in character, the effect upon this current when passing through a trip relay should be considered. When current is applied to a telephone line circuit through the winding of the trip relay, there are

certain factors which determine the amount of current that will flow.

The application of ringing current causes a magnetic field to be set up in the relay winding which rises and falls, reversing with the current and thereby inducing in the relay winding an EMF called "Counter-electromotive force," which interferes with the impressed EMF by opposing the flow of current. The property of the relay winding by which it opposes the flow of ac is called self-inductance, or simply inductance.

Due to the effect of inductance in an ac circuit there is an apparent additional resistance offered to the flow of the current and termed reactance.

Unlike ohmic resistance in a dc circuit, the effect of reactance is to necessitate the application of a higher EMF to a circuit in order to pass a given ac through it, than would be necessary if only the resistance of the circuit opposed the current flowing.

The reactance of an ac circuit also depends upon the current frequency, as the reactance increases directly with increases of the frequency. For example, suppose the frequency of the ringing current is 20 cycles; there will be a certain magnetic effect in the trip relay winding. But if the frequency is increased to 40 cycles, the rapidity with which the value of the current changes from instant to instant will be doubled, thereby doubling the speed with which the magnetic lines of force set up by the current cut through the relay winding.

Doubling of the rate at which the magnetic lines of force cut through the relay winding, doubles, in turn, the inductance. This means that twice the impressed EMF is required at 40 cycles to maintain a given current flow as is necessary to maintain the same current at 20 cycles.

Reactance due to inductance, like resistance, is measured in ohms. The combined opposition of reactance and resistance called "impedance" is also measured in ohms.

*(To Be Continued)*

## Executive Visits With Employes By Telephone Every Week

When J. H. Carmichael, president of Capital Airlines, picks up his telephone every Thursday afternoon at exactly 4 o'clock and talks from his office in Washington, D. C., he's heard by approximately 4,100 of the line's employes in 36 cities throughout the eastern part of the U. S.

Mr. Carmichael decided that a weekly personal visit with each member of his company would help perk up a system-wide sales contest. The idea of using a telephone to talk to the far-flung employes was suggested to him by American Telephone & Telegraph Co.

A private circuit with 98 outlets was set up and each outlet equipped with a loud speaker. The result, the line reports, is that workers can hear the president's message without leaving their tasks. The system lets the employes talk back, too, and they take turns firing questions at Mr. Carmichael.

The contest that was the cause of this multi-person conversation is designed to award points to groups responsible for generating more business. Winners get prizes such as radios, cameras and furniture.

V V

## Reveal Light Weight New Submarine Cable

Submarine cable, enclosed in expensive, heavy steel jackets, has been replaced with a new light weight unarmored cable in a Western Union Telegraph Co. experimental test, it was reported on Jan. 23 at the winter general meeting of the American Institute of Electrical Engineers at the Hotel Statler, New York City.

The report was made by a Western Union engineer, C. S. Lawton, and L. H. Hutchins Jr. of Simplex Wire & Cable Co., Cambridge, Mass.

About 20 miles of the new cable, weighing a fraction of the steel-clad type in use for many years, have been spliced into the New York-Nova Scotia cable off the coast of Long Island.

As most of the world's submarine cable mileage lies in soft ocean silt and is not subject to abrasive action, it has been the dream of cable engineers for many years to perfect a cable that would not require steel jacketing, but would withstand the strain and stress of being raised and lowered, the authors said.

Such a cable was perfected, using 10-strand cadmium bronze wire, covered with polyethene, a comparatively new dielectric. By a series of ingenious splicing methods, the problem of stress and strain while the cable was being raised and lowered, was solved; new methods of playing out the new cable were evolved, and the light weight cable was spliced into the existing cable successfully, it was reported.

It was pointed out that cable companies pay a sizeable portion of their deep-water cable costs solely to put cables on the bottom of the ocean, and a logical approach to the problem of reducing cost is to be found in elimination of the expensive sheathing.

### Productivity the Key

**"Europeans envy us our standard of living. Yet they have failed to realize the basic principle that a standard of living is produced, that it is not obtained as a gift from someone. They have failed to understand that no one—government or individual—can give away what is not first produced by someone somewhere. And that someone in the long run must be themselves."**—ELMER L. LINDSETH, *president, The Cleveland Electric Illuminating Co.*

V V

## Do You Know How Big A Billion Really Is?

Today most Americans talk about billions as casually as people used to talk about thousands. And that's largely a result of the trend of government in recent years. Our national debt is around 260 billion dollars, and annual spending has been rolling merrily along at an 80 billion dollar rate. So figures large enough to tax the imagination of a first-class mathematician are commonplace in public discussion.

In view of this, a *Reader's Digest* item on just what a single, solitary billion amounts to should be of wide interest.

Suppose that your family started a business with a billion dollar surplus in the year A.D. One. And suppose it had been so badly and extravagantly managed that it had lost $1,000 every day of the 1952 years that have gone by since then.

You wouldn't have to worry about it—you'd be a long, long way from broke. For you and your descendants could go right on losing that $1,000 a day until the year 2739 before you'd run out of money!

That's how big a billion is—a solitary billion, not five or 10 or 50 of them. It indicates the incredible extent of today's government spending. It shows how much every taxpayer has to gain from government economy and efficiency. Thoroughly documented surveys say that federal spending alone could be cut by as much as 10 billion dollars a year without hurting any necessary activity.

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People who use our Type 40 Monophone say its transmission sounds like *face-to-face conversation!* There are many reasons for this, but perhaps the most important is the purity and hardness of the carbon granules. We take great pains to make these granules as pure as diamonds.

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Telephone men the world over like Monophones for their natural transmission and extraordinarily trouble-free service. So do subscribers—a fact which makes many new friends for you. Remember, too: Type 40 Monophones are comparatively low in price. Order them today!

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# Courts and Commissions

## Illinois Commission Grants Rehearings to Three Companies

The Illinois Commerce Commission, which recently acquired three new members, on Feb. 6 announced it had granted rehearings of three orders entered in telephone rate cases.

The orders were entered before the personnel changes on the five-member commission, now headed by George Perrine of Aurora, an appointee of Gov. William G. Stratton.

The General Telephone Co. of Illinois, Springfield, was granted a rehearing of a Dec. 30 order approving rate raises of $452,000 a year, about one-fourth of what the company asked (TELEPHONY, Feb. 7, p. 28).

The Illinois Allied Telephone Co., Princeton, was allowed to reopen its bid for increases totaling $77,691 annually. The old commission approved an $11,380 annual increase on Dec. 30 (TELEPHONY, Jan. 24, p. 28).

The Illinois Central Telephone Co., Clinton, was granted a rehearing of a Jan. 6 order allowing $58,000 of a $177,573 a year increase originally sought (TELEPHONY, Jan. 24, p. 26).

V V

## Nebraska Company Authorized To Increase Rates

General increases for exchange rates and charges and intra-state toll rates for the Nebraska Continental Telephone Co., Columbus, were approved on January 27 by the Nebraska Railway Commission. New rates become effective on March 1.

Increases do not apply to grounded service, but the order provides that as grounded lines are made metallic the new rates may be put in effect without further order from the commission.

The application was filed on June 2, 1952, and public hearings were held on July 7 and Oct. 27 at which a number of written and oral protests were made.

The commission's order does not give details of revenues, expenses, investment or rate of return but states that "Due to the need of the applicant for an increase in its rates and charges to presently meet increased expenses of operation, the said rates will be placed in effect and the commission will supplement the within order with further findings and conditions as to service."

Monthly rates allowed by the order are net and are set up by groups according to the number of company-owned stations at respective exchanges as follows:

| | *Group* | | | | |
|---|---|---|---|---|---|
| | *"A"* | *"B"* | *"C"* | *"D"* | *"E"* |
| *Residence* | | | | | |
| One-party | $2.90 | $3.15 | $3.65 | $4.15 | $4.90 |
| Two-party | ... | 2.90 | ... | ... | 4.55 |
| Four-party | 2.40 | 2.65 | 3.15 | 3.40 | 3.90 |
| Rural | | | | | |
| Grounded | 1.80 | 2.05 | 2.35 | 2.60 | ... |
| Metallic | 2.65 | 2.90 | 3.40 | 3.65 | 3.90 |
| Joint user | 1.50 | 1.75 | 2.00 | 2.25 | 2.50 |
| *Business* | | | | | |
| One-party | 5.50 | 5.75 | 6.25 | 7.00 | 8.50 |
| Two-party | ... | ... | ... | ... | 7.50 |
| Rural | | | | | |
| Grounded | 3.10 | 3.35 | 3.65 | 3.90 | ... |
| Metallic | 4.50 | 4.75 | 5.25 | 5.75 | 6.25 |
| Joint user | 2.75 | 3.00 | 3.25 | 3.50 | 4.25 |
| Service station (five or more on line) | 1.00 | 1.10 | 1.20 | 1.30 | 1.50 |

Following are examples of new rates for Nebraska intrastate message toll service for initial rate periods of three minutes:

| | *Station to Station* | | *Person to Person* | |
|---|---|---|---|---|
| *Airline Miles* | *Day* | *Night & Sun.* | *Day* | *Night & Sun.* |
| 0 to 5 | $ .10 | $ .10 | $ .30 | $ .30 |
| 20 to 25 | .30 | .30 | .50 | .50 |
| 46 to 54 | .50 | .45 | .75 | .70 |
| 98 to 116 | .75 | .65 | 1.10 | 1.00 |
| 188 to 212 | .95 | .80 | 1.40 | 1.25 |
| 288 to 316 | 1.15 | 1.00 | 1.70 | 1.55 |
| 428 to 470 | 1.35 | 1.15 | 2.00 | 1.80 |

V V

## Carolina T&T's Rate Hearing To Be Resumed

The North Carolina Utilities Commission has set Mar. 17 for resumption of a hearing on the application of the Carolina Telephone & Telegraph Co. for an annual rate increase amounting to about 2½ million dollars (TELEPHONY, Dec. 27, p. 25).

The company presented its side at a hearing in December and when the hearing is resumed in March those protesting the increase, including many eastern North Carolina communities, will be heard.

V V

## Subscribers of Hope (Ind.) Company Granted Toll Relief

Patrons of the Cave exchange of the Hope (Ind.) Independent Telephone Co. won a battle before the Indiana Public Service Commission recently, but efforts to buy the Hope company and the Taylorsville Telephone Co., Inc.,


Construction M

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and America's Le

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Many years of severe weather experience have convinced leading telephone companies that the permanent high strength of Copperweld Line Wire really pays off in better performance and lower costs. Along with the necessary ruggedness to resist heavy ice and wind loads, Copperweld permits safe, economical, long-span construction—offers complete protection against corrosion—and has better voice and high frequency transmission characteristics than any other high-strength conductor.

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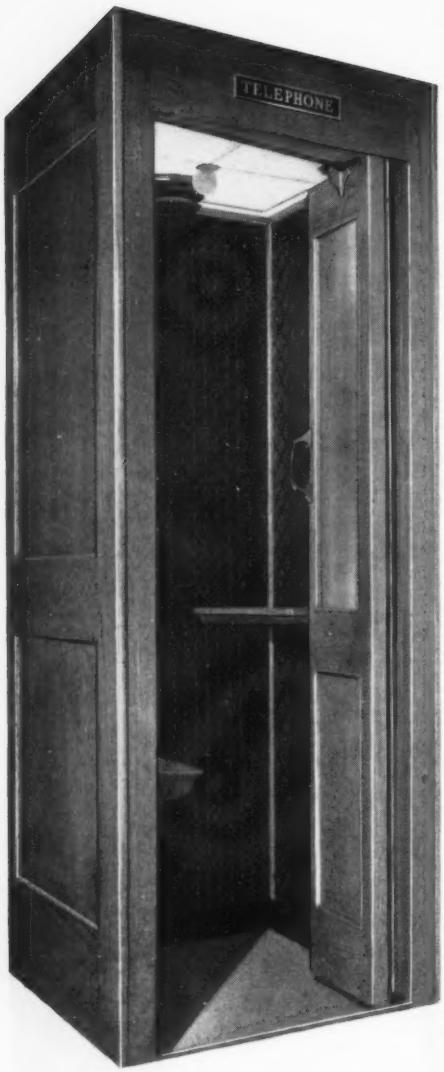


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CHICAGO 47, ILLINOIS

both headed by Max E. Hosea, Indianapolis, are still stalled in Shelby County Circuit Court (TELEPHONY, Nov. 8, p. 28).

The Hope company was ordered by the commission to stop making toll charges on calls from its Cave exchange to Shelbyville.

The order came after a number of Cave exchange patrons had refused to pay the 10-cent toll charge, contending it had never been approved by the commission. These patrons protested at a commission hearing in December that after they refused to pay, the company shut off their telephone service.

The company contended that the toll charges were authorized in a commission order issued last year. The commission ruled that it had not approved toll charges. A similar toll is charged from Hope to Columbus.

A move of the Bartholomew Telephone Corp. to purchase assets of the Hope and Taylorsville companies is still waiting clearance of the Hosea estate case in Shelby County Circuit Court. The case hinges on a court decision as to the shares of the two sons and a daughter in the estate of the late Max F. Hosea, father of the present head of the companies.

A change of judge has been asked by attorneys for Max E. Hosea. Judge Harold Barger of Shelby circuit court denied the request and an appeal was filed with the Indiana Supreme Court. A final decision on the appeal is still pending.

V V

## California Company Granted Rate Raise

Rate increases totaling $22,000, instead of the requested $63,000 a year, were granted the San Joaquin Telephone Co., Manteca, effective on Feb. 1.

The California Public Utilities Commission authorized the rate increase following an application for rate relief filed by the company in June, 1952. A public hearing was held in Manteca last October and two other hearings were held in San Francisco in November (TELEPHONY, Nov. 15, p. 38).

Rates granted are as follows:

One-party residence, $3.50; four-party, $2.50; suburban, $2.50.

One-party business, $5.35; two-party, $4.00; four-party, $3.00; suburban, $3.00.

V V

## Kansas Company Wins Raise

On Feb. 6 The McKrae Telephone Co., Fredonia, Kan., was granted an annual rate increase of $20,519, by the Kansas Corporation Commission.

## Ohio Consolidated's Interim Rate Plea Dismissed

On Feb. 4, Ohio Supreme Court dismissed an appeal by the Ohio Consolidated Telephone Co., Portsmouth, from an interim rate increase granted by the Ohio Public Utilities Commission.

The company said the commission granted a permanent rate increase on Jan. 5, making the question moot—without issue. The court has an appeal by the city of Cambridge under study.

The same question in the Consolidated case is before the court in an appeal by a half dozen cities from an interim rate increase granted General Telephone Co. of Ohio, Marion. That company also received a rate increase on Jan. 6 (TELEPHONY, Jan. 17, p. 29).

V V

## Propose Court Jurisdiction for Publicly Owned Utilities Only

A bill to remove privately owned utilities from the jurisdiction of the state industrial relations court was offered in the Nebraska Unicameral Legislature on Jan. 22 by senators Klaver and Larkin of Omaha.

Under the proposed law the court would be given jurisdiction over publicly owned utilities only. Such utilities are those operated by a governmental agency in a proprietary capacity.

The original act was passed in 1947 during a telephone strike. It made strikes illegal in Nebraska by employes of public utilities and gave the court jurisdiction over controversies between labor and management of such utilities, both privately and publicly owned.

V V

## Bill Would Put All Utilities Under Commission Jurisdiction

A concurrent resolution to again refer to the electorate a proposed state constitutional amendment to bring all privately owned public utilities in the state under the jurisdiction of the Colorado Public Utilities Commission was passed by the Colorado Senate on Jan. 29 and sent to the house.

Designed to eliminate past jurisdictional controversy between muncipalities, the measure is similar to a proposal rejected by the voters at the November election (TELEPHONY, Nov. 15, p. 38).

V V

## Buys Four Minnesota Companies

Minnesota Railroad & Warehouse Commission on Feb. 6 approved the sales of Hendrickson Township Telephone System, Kelliher Telephone Co., Kelliher Township Telephone System,

...the most widely-used telephone dry cell in the world.
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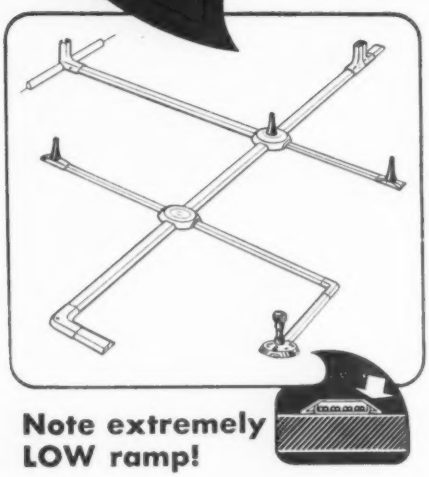

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V V

## Clear Ownership of Stock by Commission Assistant

Nebraska newspapers recently carried headlines disclosing that an assistant accountant on the Nebraska Railway Commission is a former manager of the Cortland (Neb.) Telephone Co., and still owns stock in the firm.

The point was raised by a state senator during hearings in the U. S. Senate during which U. S. Defense Department appointees were required to agree to sell certain stocks before being confirmed.

However, officials in the Nebraska attorney general's office said there was no state law prohibiting state employes from holding stocks in firms with which their department deals.

Commissioner Joe Brown said the employe is John A. Bonebright, assistant accountant for the commission, and that his duties consist primarily of assisting managers of Class E telephone companies in the uniform maintenance of records they are required to have for the commission. Mr. Bonebright's position is one in which he has nothing to do with policy but handles only such records of telephone companies as are matters of public record by law.

V V

## Rules Sales of Utility Service Cars, Trucks, Not Taxable

Sale of passenger cars and trucks used directly in rendering a public utility service are not subject to the Ohio sales tax, the Ohio Supreme Court held on Feb. 12.

The decision reversed an order of the state tax commissioner and the board of tax appeals in assessments involving three telephone companies, including the Athens Home Telephone Co., the Northern Telephone Co., Bellevue, and the Ohio Edison Co.

Pointing out that such motor equipment is not taxable, the court said that specifically-equipped motor vehicles used exclusively for keeping a public telephone or electric system in continuous operation are "used directly in the rendition of a public utility service."

V V

## To Seek Financing Approval

Officials of the Anson Telephone Co., Wadesboro, conferred with the North Carolina Utilities Commission on Feb. 5, and as a result of agreements reached at the meeting it was stated that the company soon may file for permission to raise additional capital, for expanding and improving its facilities. The improvements probably will include automatic equipment for two exchanges, it was said.

V V

## Two Independents' Applications Heard by Illinois Commission

The Illinois Commerce Commission on Feb. 17 held a continued hearing on the application of the Casey Toledo & Neoga Telephone Co., for an advance in rates.

The company serves Casey, Greenup, Kansas, Neoga, Toledo and Westfield, Ill.

On Feb. 18, the commission was to have held continuation of the hearing on the application of Suburban Telephone Co., Dunlap, for authority to issue $22,459.49 of its notes.

V V

## Commission Dismisses Rate Plea of Nebraska Company

Application of the Liberty (Neb.) Independent Telephone Co. for rate increases recently was dismissed at the company's request by the Nebraska Railway Commission.

The application was filed on Nov. 3, 1952, and the matter was set for informal consideration on Dec. 2. No protests were received. The company next asked the commission to dismiss the application, and this request was granted.

V V

## Lima (O.) Company Requests Return of 5.68%

The Lima (O.) Telephone & Telegraph Co. on Feb. 10 applied to the Ohio Public Utilities Commission for an annual rate increase of $261,716.

The company said the increase would give it a 5.68 per cent return on its investment of more than 7½ million dollars.

V V

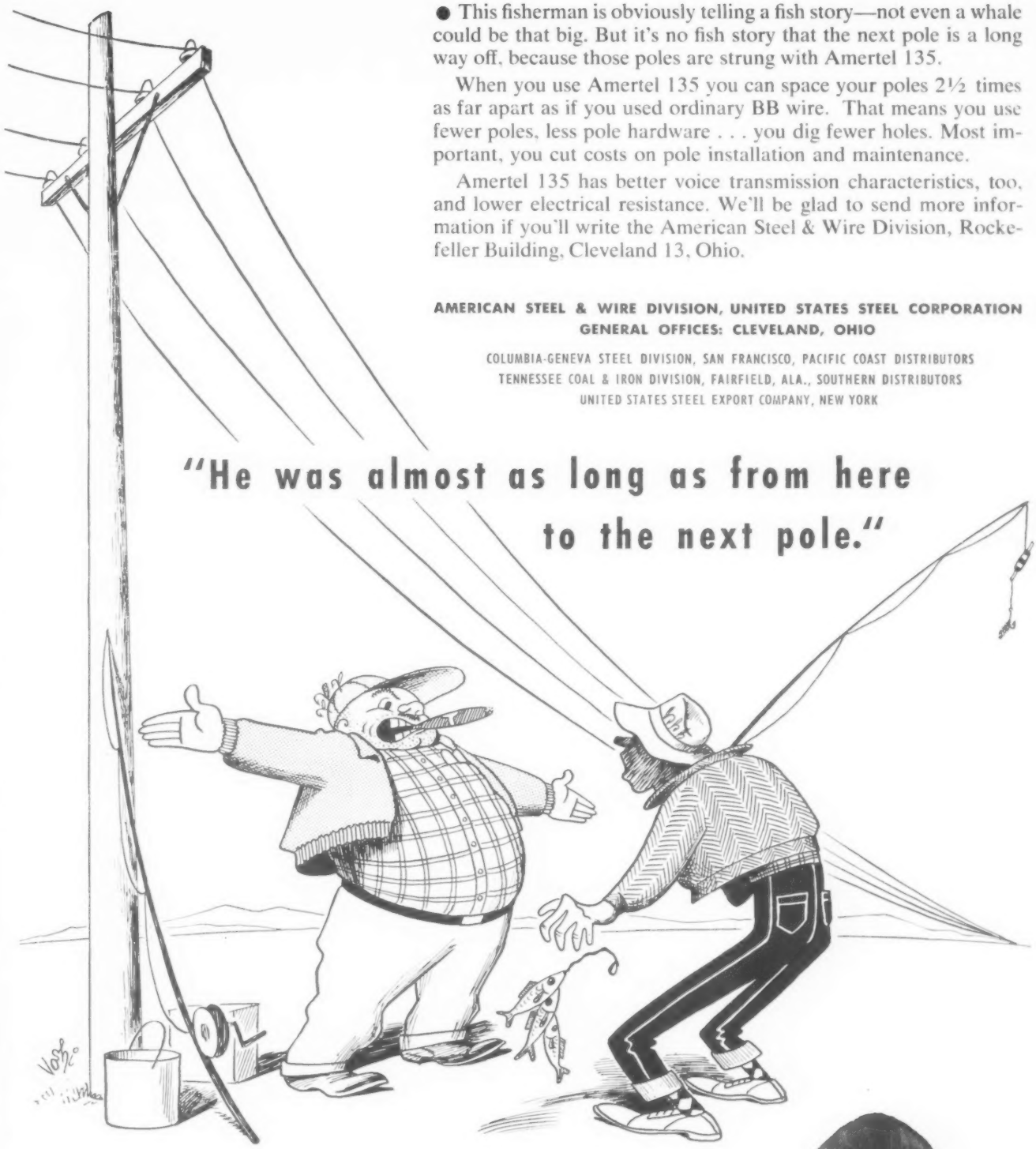
## Cal. Independent Changes Name

The Raymond (Cal.) Telephone Co. is changing its name. It will be known as the Sierra Telephone Co. One of the oldest telephone companies in the California hills, the company has expanded to the extent that it is no longer a local business. This is the reason given for its new title.

V V

## Wis. Company Seeks Rate Raise

Application of the Cecil-Green Valley Toll Line Co., Cecil, for authority to increase rates, was to have been heard on Feb. 19 by the Wisconsin Public Service Commission.



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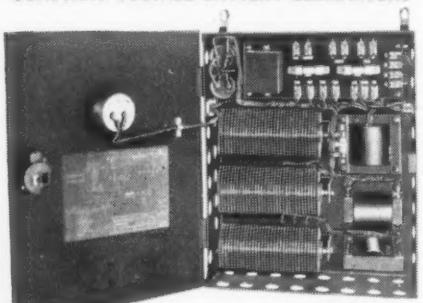

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## The Exploring Coil

*(Concluded from page 17)*

magnetic field from the buried wire intersects the field of the coil, and a current is generated, which is amplified and heard.

However, if the coil is held in a spot where it is directly over the buried wire, the magnetic field intersects each side of the coil with equal strength. This causes the currents to cancel out in the coil, and the sound of the tone in the ear-phone will reduce sharply or disappear altogether.

This is how the conductor is located: With the coil held level, when the fade-out or "null" point is reached, the buried wire is directly below. Therefore, the operator, as he walks around with the coil, should move in a direction which will follow this line of reduced signal. This will trace the route of the underground conductor.

If the conductor is grounded at some point, the tone signal will not follow the conductor beyond the fault. Instead, it will fan out in all directions to get back to the ground rod, if one is used for a return. Therefore, no null point can be found beyond the fault. The spot where the null point disappears is the location of the fault.

If the cable sheath is being used as a return, the tone sound will disappear completely when the fault is reached.

### Depth of Conductor

The depth at which a conductor is buried may be determined by the following procedure.

Procure an adjustable spirit level, which will show a 45-degree angle as well as a level condition. Tape a slat across the coil, and fasten the level to the slat.

Establish a level condition, and hold the coil directly over the null point, where the signal fades out. Place the coil on the ground and make a mark on the ground in its exact center.

Next set the level for 45 degrees, and holding the coil at that angle, move it sideways, away from the route of the buried conductor. Another null point will be reached. Again mark the center of the hoop on the ground.

The distance between the two marks will be the distance the conductor lies below the point where the first mark was made. If the coil is held in the hands instead of being placed on the ground for these measurements, the measurement obtained will be the distance the conductor lies below the point where the hoop was held, rather than the distance below the actual surface.

## More About Testing

*(Continued from page 19)*

The most inexpensive set of this kind (to be made up locally) uses a cold cathode tube. Only two electrodes of the tube are used and these are bridged by a receiver and a small condenser in series. When the tube breaks down the condenser causes an oscillation to be set up in the receiver circuit which produces a tone. An amplifier and loud speaker may be used in place of the head receiver. As the only equipment required is the tube and socket, a condenser, two rheostats, a head re-

### Answers to Traffic Questions On Page 15

(1) Say for example, "I am sorry, I do not have a record of the call but I'm sure the (distant place) operator will call you back." If the called party does not at once hang up, say for example, "If you will hang up, it will be easier for the (distant place) operator to reach you," and release the called line.

(2) Tell the customer that there may be an overtime charge and ask him to hold the line. Secure the number of chargeable minutes from the overseas operator, determine the amount of overtime due and secure the deposit.

(3) Only the conference operator at the originating toll center is responsible for timing a conference call, regardless of whether or not she relays the call for completion to another office.

(4) The operator should monitor until she is sure that conversation is proceeding satisfactorily and then cut out.

(5) The operator should end timing and challenge. If no reply is received, she should proceed as follows: Release the calling line, compute the chargeable minutes, then enter in the "Minutes" space on the Conference ticket and on each OUT ticket. Reach the relay operator, give her the chargeable minutes followed by "Conference. Clear," and wait for her to quote the charge. When you receive it, clear the circuit and enter the charge on the ticket.

ceiver, and a few resistances, this set may be constructed at small expense. However, it gives only one indication. We have not yet been able to devise a circuit with two or more tubes.

The sliding IDF shoe is the best method of making contact with the lines if it can be used. However, the HIDF blocks must all be of the same design and size and they must be well lined up. Also, many late types of small boards, both dial and manual, did not have an IDF.

We believe that the makers of small dial switchboards will develop equipment for making rapid multiple tests when the demand for such equipment becomes stronger.

We know that frequent dry and wet weather tests *(if each case is followed up and cleared)* is one of the best ways of preventing and reducing outside plant trouble. To make these tests some method of rapid fire testing must be used.

*(To Be Continued)*

## In the Nation's Capital

*(Continued from page 14)*

A similar bill died in the last session of the 82nd Congress. This year, Representative D'Ewart is ranking majority member of the House Interior Affairs Committee, so there is more likelihood of progress at this session.

Another part of the bill permits the Secretary of Interior to charge for telephone and other utility services which he renders over the facilities which the Interior Department might operate. This provision of the bill permits the Secretary to "furnish all types of utility services to concessioners, contractors, permittees, or other users of such services," on the basis of "reimbursement of cost."

Now, it is probable that the author of this bill has nothing more in mind than giving the Secretary of Interior authority to construct and operate communications service for the various forest rangers, fire watchers, park attendants, etc.—in such cases where there is no existing telephone service. Obviously, these public servants require some form of constant communications to do their work efficiently and to get in touch with headquarters.

But the Interior Department, back in the years of "BC" (before Chapman, that is) developed quite a reputation for taking a mile for every statutory

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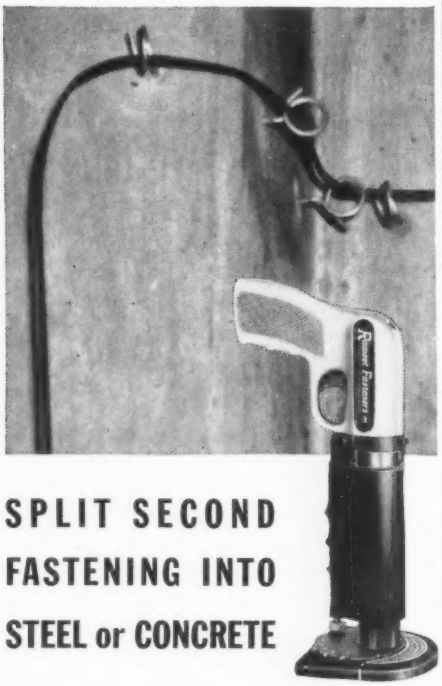

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inch Congress gave by law. Secretaries Ickes, Krug, and Chapman amazed Congress, time and again, with their ability to reconstruct statutory authority to go into the electric power business, build competing transmission lines, and just about run the private utilities ragged—all out of a random phrase here and there, stretched by cunning lawyers to outlandish proportions.

Maybe all this will be changed under the new Secretary of Interior, former Gov. Donald McKay of Oregon, who professes a desire to get the government *out* of the electric power business. If Secretary McKay feels that way, it is not likely that he would want to get the government, or particularly, the Interior Department, *into* the telephone business.

But by the same token, he would surely not object to some clarifying and protective language which would spell out very clearly a prohibition against the government going into the telephone business or slipping into it backwards, side-wise, or under a disguise of performing an "incidental" public function. That is the old racket by which the government got into the power business.

And another thing. We cannot always be sure that the Interior Department will be continuously manned by officials, such as Secretary McKay or his Assistant Secretary Aandahl, former governor of South Dakota—and even more outspoken advocate of getting the government out of competitive enterprise. Hence, the importance of keeping a weather eye on the D'Ewart Bill, which may not even stir in the House Committee. If it does stir, the industry will certainly want to start reaching for the blue pencil and the big shears.

### Collier's Article

It is not often that this writer gets a chance to comment on an article in a publication of general interest on such a specialized subject as the Independent telephone industry. For that reason, Bill Davidson's entertaining piece in the Feb. 7 issue of *Collier's*, entitled "5,000 Ways to Make a Telephone Call," should at least get an "A" for effort. The author obviously started out to stress the human aspects of small company telephone operations, which is, in itself, a worthwhile objective.

But it would have given the readers of the popular *Collier's* magazine a more accurate picture of the Independent industry if Author Davidson had been less fascinated by the surviving hand crank telephone, and more observing of some of the up-to-the-minute modernized equipment in so many of our Independent systems. These yield to nobody (but nobody) in "ringing the bell" for advanced telephone service.

With the need for raising large sums to meet expanded service demands, it does not help the Independent companies to foster the idea that they are quaint, picturesque hang-overs, or primitive freaks which exist by the good grace of handouts or hand-me-downs. No observing person who knows the facts can honestly think that the Independent telephone industry is an economically obsolescent phenomenon, or a tenant by sufferance on the modern American scene. It is hard to believe that larger system people would want that type of erroneous impression to be spread around.

Maybe some of these days one of these feature writers will spend some time away from Aunt Mamie's kitchen stove, with the switchboard up over the lard can. Maybe he will get a load of the kind of telephone service the movie stars get out at Santa Monica, or the big-shot industrialists get in Rochester, N. Y.—or in Fort Wayne, Ind., and other top-flight communities, too numerous to mention. You don't have to ring a "bell" for service, or reach for anybody's helping hand to raise the operator in these parts.

All that to one side, however, Bill Davidson's story in the Feb. 7 issue of *Collier's*, is "a must" reading for all telephone folks, whether Independent or Bell. And if both of them happen to read it together, it ought to provide the basis for many a swell argument. A certain small investor who stood by the blue chips, notwithstanding friendly advice on a certain Independent security six months ago, would be very glad to join the party.

V V

## Georgia Independent Publishes News Bulletin for Employes

TELEPHONY recently received from H. M. Stewart, president of the Standard Telephone Co., Cornelia, Ga., a copy of the company's neatly mimeographed two-page employe bulletin. The first issue of the bulletin, named *The Standard Bearer*, was published on Jan. 28.

News of employe activities, comments on the company's improvement and expansion of service, and employe performances on the job, are some of the news items covered in the paper.

*The Standard Bearer* is a good example of what smaller telephone companies can do to improve employe relations and to upgrade employe performance.

## Frank L. Eldridge, Veteran Independent, Dies

Frank L. Eldridge, 70, popular and pioneer Independent telephone man, died on Feb. 10 in Evanston, Ill., where he had resided for the past several years.

Mr. Eldridge had been in the telephone business for 50 years and at the time of his death was sales representative in the telephone industry for

F. L. ELDRIDGE

Ray-O-Vac Co., Madison, Wis., dry cell manufacturer and Gould-National Batteries, Inc., Trenton, N. J., manufacturer of storage batteries.

Mr. Eldridge was born in Walcott, Ind., on June 23, 1882, but had lived in Chicago since the age of 10 years.

In 1902, he became associated with the engineering department of the Santa Fe Railroad. The next year he began his telephone career in the collection department of the old Chicago Telephone Co.

Four years later, in 1907, he became associated with the American Telephone & Telegraph Co., as special agent handling toll adjustments and disputed charges. Later he was made service inspector, taking care of transmission tests and special assignments for the operating and commercial departments of AT&T.

In January, 1912, Mr. Eldridge left AT&T to become special agent in charge of long distance service for the old Illinois Telephone & Telegraph Co.

He left this post in 1913 and was appointed secretary of the Central States Telephone Service Association, which became the service department of the Independent Telephone Association of America, a forerunner of the present United States Independent Telephone Association.


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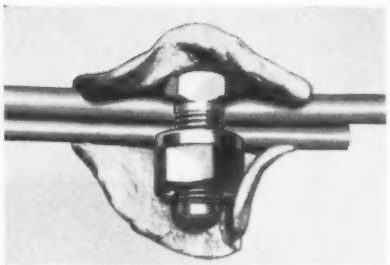

Secure sealing of connectors is accomplished readily because of the pliability of *AIRSEAL*. Application is made by kneading the compound over the connector.

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In 1914, he joined the sales department, as special representative, of the Kellogg Switchboard & Supply Co.

He left Kellogg in March, 1919, to become general sales representative in the telephone and railroad field for the old French Battery & Carbon Co., predecessor of Ray-O-Vac Co. He established a sales office in Chicago at this time.

In 1930, Mr. Eldridge established the Frank L. Eldridge Co., with offices in Chicago. In addition to representing the Ray-O-Vac company, he acted as telephone and railroad sales representative for various manufacturers. In 1936, he became associated with Gould Storage Battery Co., a predecessor of Gould-National Batteries, Inc.

Funeral services were held in Chicago on Feb. 13.

Honorary pallbearers included R. H. Burfeind, Chicago; J. I. Kennedy, Freeport, Ill.; A. S. Crane, Chicago; G. W. Rodormer, Park Ridge, Ill.; A. F. Adams, New York City; James H. Kellogg, George Ferguson, Chester Ruth, all of Chicago; Oscar Burton, Tyler, Tex.; J. K. Johnston, Indianapolis, Ind.; J. B. Haley, Washington, D. C.; George Morse and Ray Smith, both of Chicago.

Active pallbearers were C. E. Brown, C. H. McLean, C. H. Knapp, R. E. Williams, Roy F. Smith and R. C. Reno, all of Chicago.

Mr. Eldridge is survived by one son, Frank L. Jr., Muskegon, Mich.; four daughters, Mrs. Betty Smith, Davenport, Ia.; Mrs. Virgilyn Temple and Mrs. Mary Jane Gallagher, both of Boulder, Colo., and Mrs. Grace Martin, Peoria, Ill.; two brothers, Neal D. and Merritt F., both of Chicago; and four sisters, Mrs. Grace Warner, Chicago; Mrs. Edith France, Miami Beach, Fla.; Miss Hazel Eldridge and Miss Alice Eldridge, both of Chicago.

Two brothers, Harry E., and Willard H., preceded Mr. Eldridge in death.

V V

## Teletype Inventor Honored With AFCA Citation

Edward E. Kleinschmidt, founder and president of Kleinschmidt Laboratories, Deerfield, Ill., and inventor of Teletype and a new portable teletypewriter, was awarded a special citation by the Chicago chapter of the Armed Forces Communications Association (AFCA) for "his distinguished contributions to the progress of civilian and military communications — particularly in the field of printed, electrically-transmitted messages."

One hundred and fifty Chicago area communications executives and representatives of the Armed Forces at-

tended the chapter's dinner meeting on Jan. 30 in the Kleinschmidt Laboratories, at which AFCA's president, James H. Kellogg, presented the citation, first of its kind to be given by the

E. E. KLEINSCHMIDT

organization. A reception preceding the dinner honored Mr. Kleinschmidt and eminent guests. E. E. Mead, vice president of the laboratories, and Mr. Kleinschmidt each gave brief talks.

The citation points out that "for 55 years E. E. Kleinschmidt has been tireless in his efforts to advance the art of civilian and military communications," and that "his own capacity for inventiveness and clear thinking enabled him to develop the picture telegraph (1900); railway signaling devices (1910); the printing telegraph apparatus (1912), which later became known as Teletype; and the new lightweight high speed teletypewriter, for the Armed Services of the United States (1945)."

Mr. Kleinschmidt, who was born in Bremen, Germany, in 1875, and came to this country in 1898, soon afterwards opened his own electrical shop in New York City, and from 1913 to 1925 was president of the Kleinschmidt Electric Co. He founded the electrical research laboratories bearing his name, in 1931, and continues to serve as president.

Inventor Kleinschmidt has also served as an officer of several allied corporations. From 1928 to 1930, he was vice president of both the Teletype Corp. and the Teletypesetter Corp.; from 1930 to 1940, he was vice president of the International Inventions Corp.

He is a member of the American Institute of Electrical Engineers. In 1940, he was awarded the John Price Weatherill medal for his invention of Teletype, by Franklin Institute.

A film in color, "'The Portable Teletypewriter," showing the development of this new equipment, its manufacture in the Kleinschmidt Laboratories, and its use by the Armed Forces in Korea and other areas, was shown to the communications men. Later they toured the laboratories where the teletypewriter is in production.

V V

## Microwave Radio Relays Completed in Norway

An Oslo, Norway, newspaper, *Aftenposten*, reports that installation of microwave radio relays on the Bergen-Oslo telephone line has been completed. Tests have progressed where daily microwave connection between the two cities is feasible at any times, says the paper. The new communications system, called micro-link in Norway, will greatly increase the number of simultaneous telephone calls and teletype connections.

Experiments with micro-link were started by the Norwegian Defense Research Institute in 1946. Two years ago, a trial circuit was set up between Bergen and Haugesund. As the results proved to be satisfactory, the system was later extended to Stavanger.


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# news on new PRODUCTS

INSULATING COMPOUND—A new putty-like electrical insulating compound that comes in a roll and applies like tape has been announced by Minnesota Mining & Manufacturing Co.

Designated "Scotchfil" brand electrical insulation putty, the black, ⅛-inch-thick material fuses into a void-free mass after application. It is designed

not only to insulate, but also to pad sharp edges, build up cable splices, and fill voids around irregular-shaped connectors quickly and conveniently prior to taping.

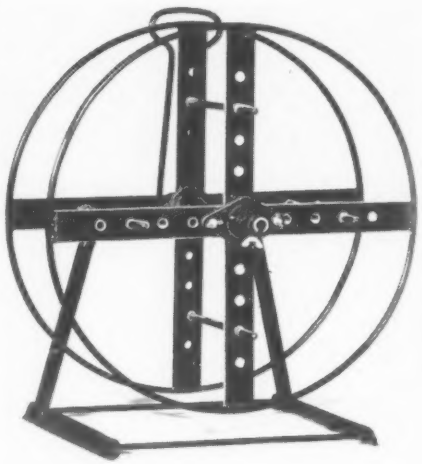
Since it comes in roll form, it is necessary to use only as much as is needed for the job, and the rest of the roll is protected by a disposable liner. As the material is used, the liner is stripped off, and the insulating putty is molded into place with the fingers, providing a smooth, non-sticky, easy-to-tape surface that does not smear or come off on the hands.

It is used with "Scotch" brand plastic electrical tapes Nos. 22 and 33 since the backing and adhesive of these tapes form an inseparable bond with the material, adding to the mechanical strength of the splice. The manufacturer states it will not dry out or become hard and brittle.

It has a dielectric strength of 350 volts per mil, and insulation resistance of 100,000 megohms, and will not corrode copper or silver. It comes in rolls 1½ inches wide and 5 feet long. Request NP 142.

• • •

REELS—The HyKon Mfg. Co. has announced two new heavy duty reels



designed for handling drop wire, large bulky coils of cable, etc. They are adjustable for all coil sizes.

Specifications of the new reels—25-inch size and 30-inch size—follow:

| 25-inch Size | | 30-inch Size |
|---|---|---|
| 25 inches | Outside Dia. | 30 inches |

TELEPHONY PUBLISHING CORP.
608 S. Dearborn St.
Chicago 5, Ill.
Please have the manufacturer send me without obligation the literature indicated by the following numbers:

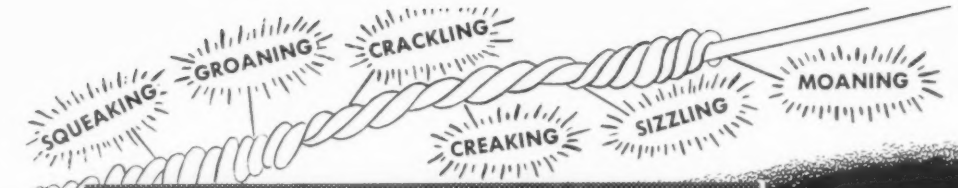
NP142____; NP143____; NP144____; NP145____; NP146____;
NP147____; NP148____; NP149.

Name..... Title.....

Company.....

Street.....

Town and State.....
2/21/53

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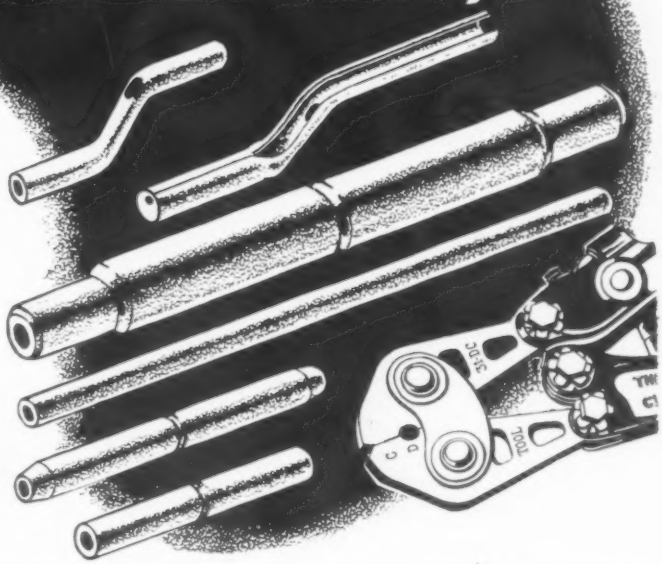

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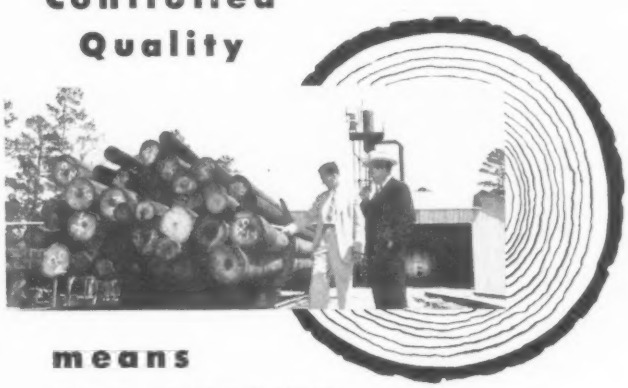

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| 6¾ to 18¾ inches | Adjust. for coil eye | 6¾ to 18¾ inches |
| 7¼ inches | Coil Width | 7¼ inches |
| 33 pounds | Ship. Wt. | 40 pounds |

Request NP 143.

• • •

SOLDERING PLIERS—The St. John Engineering Co. has developed a pair of electrically heated long-nosed pliers

which permits wiring and soldering in one operation. Following are the operating details of the pliers as outlined by the manufacturer:

(1) Heat is generated in the work by passing a heavy current from the plier tips through the work.

(2) Work held by the pliers is instantly heated when the foot-switch is pressed. Solder is melted by contact with the heated work. Cooling starts the instant the foot-switch is released, yet the pliers need not be removed. Preliminary wrapping of the connection is thus made unnecessary.

(3) Pliers are so constructed that there is virtually no heat generated within themselves, therefore no radiated or conducted heat from the tool to scorch or shrink insulation or burn bare hands.

(4) Operating voltage is low and will not force current through films of oxidation, rosin, or other insulating media. This insures an electrically sound connection and eliminates "cold joints."

(5) No current is drawn unless the foot-switch is operated and plier jaws are closed or in contact with a low resistance metal object. Inadvertent operation is practically impossible and fire hazard is eliminated.

(6) Durable construction of hardened aluminum alloy permits use as conventional wiring pliers. Solder will not adhere to the pliers. Request NP 144.

• • •

ELECTRIC PLANT — A new, 180-cycle, gasoline engine-driven electric plant, designed to operate high frequency electrical work tools, has been announced by D. W. Onan & Sons Inc. At unity power factor it provides 5,000 watts of ac, 230-volt, 180-cycle, three-phase power or 3,000 watts, 230-volt, 180-cycle, ac plus 2,000 watts, 115-volt dc.

Model 5CK-185M provides independent power for 180-cycle electric tools where no standard power is available for conversion. The unit is portable. It is powered by the lightweight Onan "CK" two-cylinder, four-cycle, air-cooled gasoline engine. Over-all dimensions: Length 35 inches; width 23½ inches; height 23½ inches; weight 270 pounds. Standard equipment includes a mounted 4½-gallon fuel tank and a carrying frame. The unit is manually started.

In addition to operating 180-cycle electric tools such as saws, drills and grinders along with other standard universal motor tools, the plant will provide power for lights for night or emergency operations as well. Request NP 145.

• • •

PLASTIC CABLE CLAMPS—A non-inflammable plastic cable clamp is announced by Holub Industries, Inc. It is made of Saran, a tough, strong thermoplastic material, also offering excellent electrical and thermal properties.

Other important characteristics, according to the company, are its inertness to fungicidal attack, ability to withstand changes in atmospheric conditions and resistance to corrosion or sweating. Saran is not affected by prolonged immersion in water and remains stable when exposed to mild acids, chemicals, oil, etc. It is non-toxic and has excellent abrasion re-


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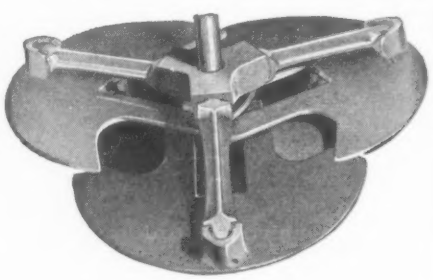

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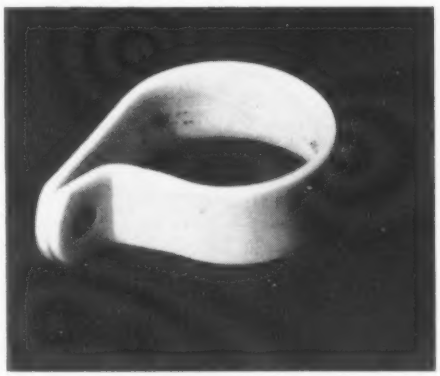
sistance. Reduction of weight is claimed as another feature.

Because Saran is a pliable material, this clamp can be opened to any dimension for easy sliding over wires, cable, pipe or tubing. Edges are rounded to



prevent damage to insulation, etc. Being resilient, the plastic clamp eliminates the need for lock washers in many instances.

Saran clamps are made in 17 stock sizes, ranging from ⅛ of an inch to 1¼ inches. The producer also announces new sizes of its ethyl cellulose clamp. The present size range is ⅛ of an inch to three inches, a total of 22 stock sizes, including a shape made especially for 300-ohm flat twin lead-in wire. Request NP 146.

• • •

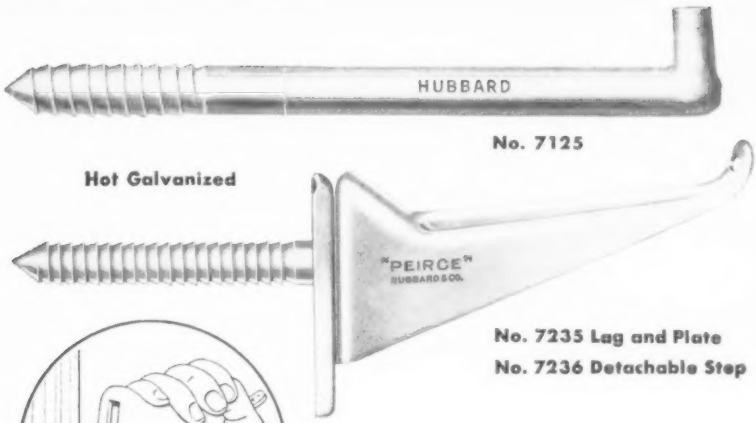
SOLDERING GUN—Wall Mfg. Co. has just introduced a new instant heat gun type of soldering iron without the

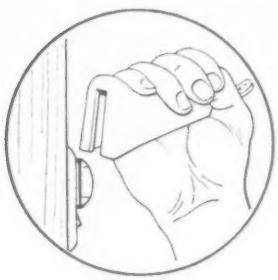
use of a transformer, which the company claims makes soldering more accurate, more economical and more efficient for maintenance men and servicemen.

The Wall Trig-R-Heat soldering iron has a light, plastic gun-grip which makes it easy to handle and aim. Heat reaches working temperature within a few seconds after the trigger control is touched. A heat-control thermostatic action prevents the iron from getting too cool for efficient soldering, or too hot for tip safety.

A switch-controlled spotlight makes interior soldering easier. Wall Trig-R-Heat soldering irons cause no radionic interference when in use. The new iron operates on ordinary house current, 115-120 volts, ac or dc. Wattage starts


# HUBBARD POLE STEPS



The Plate is attached to the pole by means of a single special lag, and a nail to keep the plate from turning. The step is slipped over the head of the lag and removed when the job is done.

Four or five Hubbard Detachable Pole Steps at the bottom of the pole discourage unlicensed climbing. For the upper pole, Hubbard Pole Step No. 7125 has gained well deserved popularity. Made of new Open Hearth Steel, it is regularly tested for strength far in excess of any possible human load. It has fetter drive threads and a drive head for easy driving without bending or injury. The Pole Step provides ample foot room, and a marking ring indicates correct driven depth and forms a tight seal against water seepage. Both Steps are universally used by the largest telephone companies.

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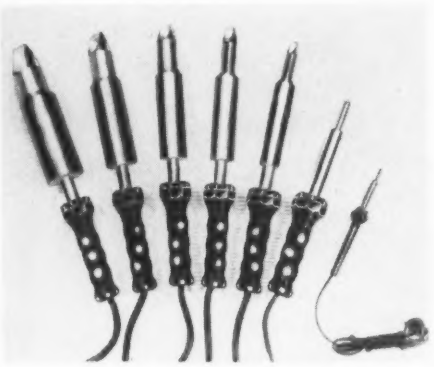
• • •

SOLDERING IRONS—The Wall company also has just introduced a new line of industrial electric soldering irons.

These new soldering irons also have the thermostatic action which controls



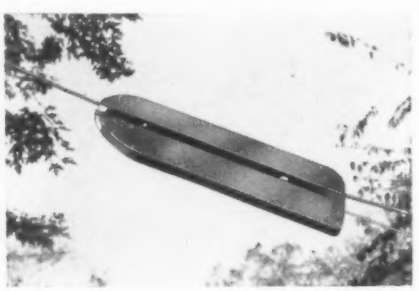
heat so that fusing and tip-burning are eliminated, the company reports.

Irons in this new Wall industrial line range from the smallest to the largest made—suitable for every type of industrial use—from 1-ounce to 1,000 watts . . . with thermostatic action up to 2,600 watts. Irons operate on 110-120 volts, ac or dc. Request NP 148.

• • •

WIRE CREEPER—A wire creeper, which enables linemen to string additional wire through trees, over buildings, across ravines and other troublesome areas quickly and easily, wherever one wire is already in place, has been announced by Martindale Electric Co.

The creeper is placed on the wire and by means of pulling and releasing the plastic cord attached to it, the operator moves the creeper away from him and along the wire in 10 to 20-foot steps



from one pole to the next in less than a minute. Trees slow the operation slightly. When the creeper reaches a pole, the new wire is pulled across by means of the plastic cord.

Line splices and frayed insulation are no problem for the creeper. It will travel up steep inclines and through

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twigs and foliage of surrounding trees. For night work, a luminous bottom permits the operator to follow its progress closely. At times of storms and other emergencies, the creeper is invaluable because of its speed of operation.

The creeper enables a smaller crew to string more wire than larger crews used to do. In addition, it eliminates the hazards involved in climbing trees, fences, hills, etc. Request NP149.

V V

### U. S.-Syria Radio-Telephone Service Now Available

Radio-telephone service between the United States and the Republic of Syria became available on Feb. 13 according to an announcement by the Long Lines Department of the American Telephone & Telegraph Co.

Telephone calls to the distant republic will be routed from New York via Rome, Italy, the report said.

The rate, excluding tax, for a three minute call between Syria and any point in the United States is $15.

V V

### Liberia Now Has Third Public Telephone System

A new telephone system, completely government-owned and operated, was recently inaugurated in Liberia, Africa.

This is the third public telephone system to be installed in the country. All other systems in use are privately owned and limited to company use.

The new system will serve the city of Monrovia. Future plans call for service throughout the country, and 350 of the ultimate 1,200 telephones are now installed.


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The new Model R Ratchet Lever Hoist features Coffing's time-proved Safety-Pull ratchet-pawl construction — plus coil chain for extra flexibility. Chain wraps in any direction . . . resists rust and corrosion. For ease of servicing, the Model R may be completely disassembled in seconds with only a screw driver. For safety, each unit is tested at 100 percent overload.

For more information on the new, handy Model R, write for bulletin T2R.

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**DANVILLE, ILLINOIS**
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MAGNETO TELEPHONE EXCHANGE serving three towns and rural with 305 subscribers about 50 miles north of St. Louis, Mo. Most lines just rebuilt and new switchboard installed in August 1952. Priced at $300.00 above gross sales for 1952. Write Winfield Telephone Co., Winfield, Mo.

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**TELEPHONE WIRE**

**30,000 miles, W 110-B Insulated, seven strands, 4 steel, 3 copper, single cotton braid jacket, water resistant compound coated, 1 mile to a reel. Unused—excellent condition. Price—.002 ft.**

**Ecco—230 E. 127 St., New York, N. Y.**

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Complete with W.E. #5HA-2 Dials (Black Numerals with Operator in "O" position). W.E. F-1 and HA-1 Capsules, Neoprene Cords. 25, 33-1/3. 50 and 66 cycle ringers or Straight line. Only 150 available at $20.00 each.

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Complete line of Telephone supplies, completely rebuilt and guaranteed. Write your needs.

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| C-161 repeat coils | $3.50 each |
| Ringer boxes W/induction coil, bell, capacitor | $1.00 each |
| Terminal blocks | $1.00 each |
| Reconditioned like new W/new 3 cond. cords Kellogg, W.E. Co. handsets | $4.95 each |
| Reconditioned Army EE8 telephones | $20.00 each |
| Upright desk telephones W/A.E. 24A36 dial & ringer box | $8.00 complete |
| Induction coils Kellogg 82A New | $1.00 each |
| A.E. type 38 handsets reconditioned W/new 3 cond. cord | $3.00 each |
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| W.E. Rectox rectifiers | $20.00 each |
| New Patch cords 4 foot W/2PL47 plugs | $2.00 each |
| W.E. 100 line protectors | $40.00 each |
| W.E. 50 line protectors | $25.00 each |

*Terms: Check with order F.O.B. Brooklyn, N. Y.*

**EASTERN TELEPHONE COMPANY**
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